

THE
MEDICAL NEWS AND ABSTRACT.

VOL. XXXIX. No. 4.

APRIL, 1881.

WHOLE No. 460.

CLINICS.

Clinical Lectures.

ON FRACTURE OF THE PATELLA. RELATIVE VALUE
OF BONY AND FIBROUS UNION IN TRANSVERSE
FRACTURES.

A CLINICAL LECTURE DELIVERED AT BELLEVUE HOSPITAL, DEC. 1880.

By FRANK H. HAMILTON, M.D.,

SURGEON TO BELLEVUE HOSPITAL, NEW YORK, ETC.

GENTLEMEN: Last year I presented to the medical gentlemen and students assembled here fourteen cases of fracture of the patella, which had united by fibrous tissue. Some of these were quite old cases, and some quite recent cases; some with a short fibrous union, and in some the bond of union was quite long; but the patients were all able to walk very well, and in some the flexion and extension, and all the functions of the limbs were completely restored. At the same time I presented an analysis of 127 cases, 64 of which had been more or less under my personal observation and care. In the analysis of these cases it was found that in a large majority the union was known to be fibrous, indeed, that not in more than five or six cases was there a suspicion that bony union had taken place, and in not one was its existence proven. Subsequently these 127 cases were published in detail, with the results of the analysis, embodying certain other conclusions and inferences; and my remarks to-day are intended chiefly to supplement the observations then made, but especially in reference to the relative value of a fibrous and bony union.

First, I will repeat what was said by me on the occasion alluded to, namely, that the evidence presented by the study of cases which had come under my observation was well-nigh conclusive that a fibrous union is as useful as a bony union, and probably less liable to a renewed separation. The same was substantially shown by the cases brought before the gentlemen for their inspection. I shall pursue this subject to-day more in a theoretical point of view than by an actual study of cases.

Suppose it were possible to make a transverse fracture of this bone to unite by bone—remember that nearly all of these fractures are transverse—with the fragments in actual contact. What evidence has been presented, and what reason can be assigned why it should be any stronger than if the

union were fibrous? The ligamentum patellæ, although much more slender than the patella in its transverse and antero-posterior diameters, does not break once where the patella breaks ten times; yet it is subject to the same strains as the patella. In the last (6th) edition of my work on "Fractures and Dislocations," I have recorded a case seen by me in which the patella having been broken the second time by muscular action, the separation took place, not through the newly-formed fibrous ligament, but through another portion of the bone itself, proving conclusively that the new ligament, of half an inch in length, at the end of five or six months, was better able to resist the cross strain and muscular action than the original bone.

In the preceding remarks, gentlemen, I have supposed the fragments to have united by bone, while they were in actual or nearly actual contact, although no evidence has yet been presented to me that this has ever happened in the case of a transverse fracture. I see no reason, however, why it might not occasionally happen when the fragments have been broken, but not actually separated from each other through their entire thickness; nor, indeed, that it might not happen whenever the fragments having been completely separated are again, and at an early day, brought into contact, and maintained in absolute contact for a sufficient length of time. I am not disputing the possibility of close bony union, under certain possible conditions. I am only comparing the value of that close bony union with an equally close fibrous union, and the conclusion is that the fibrous union is likely to be the strongest, and, therefore, the best. A fibrous ligament here, as everywhere else in the body, is stronger than a bone of equal size, and will especially resist more successfully a cross strain.

Let us now make another supposition, namely, that the fragments have united by bone, *but with a separation of half an inch or of an inch.* Here is a specimen of that kind of union. The fragments after a transverse fracture have united by a slender bridge of bone of about one inch in length. The argument will be the same whether its length is more, or somewhat less. It is a bridge of solid bone, but of less than half the thickness of the original bone. The bridge is defective in the centre, presenting here a pretty large oval space, which was closed in before it was cleaned by a fibrous tissue. A glance will convince you that this bridge of bone could not have resisted any considerable cross strain, and that any effort to bend the knee to a right angle must almost inevitably have snapped it like a pipe stem. The bone was sent to me, and its history has not yet been obtained, but the presumption seems to be inevitable that it was taken from an ankylosed limb. In my attempt to clean it, I broke, as you will see, one side of the bridge, and it is certain that no portion of it could have withstood a bending of ten degrees, while the quadriceps retained its normal power of contraction. It requires very little mechanical or physiological learning to understand that a fibrous band of the same dimensions would have been much stronger, and, therefore, more useful than this.

If the bond of union is to be bone, then, we argue the union must be accomplished with the fragments in absolute, or nearly absolute contact; and I have no satisfactory proof that this has ever been done, nor does it seem to me that it is possible that it ever will be done, except in those rare cases in which the fracture has occurred without complete separation of the fragments; as, for example, where the anterior margins of the line of fracture are separated, and the posterior remain in contact, so that the

joint is not actually opened. This is a possibility, as this experiment upon the cadaver will illustrate. With a broad chisel and hammer, my assistant has cut or broken the patella transversely, but the thin cartilage covering its posterior surface has not been torn, and the joint is not exposed. So that while in front the fragments can be separated one-quarter of an inch, they remain in contact posteriorly. If this were the condition of the fragments from the beginning a bony union would be very possible, or quite probable. If they are separated an inch or even one-quarter of an inch completely, posteriorly as well as anteriorly, the union of bone would be accomplished under great difficulties, and probably not until after the lapse of several months, during which the joint must be kept in a state of complete immobility. It is my opinion that in all of the cases in which an examination of the specimens after death has shown that the fragments have united by bone with a separation of half an inch or more between the fragments—and the specimens of this kind of union known to exist are very few—the knees of the patients from whom they were taken, were ankylosed. Certainly it could not have been formed when the knee was in motion, and probably in all these cases there has been first a ligamentous bond, which has been gradually changed into bone.

Notice what difficulties exist in the way of union by bone. The fragments are not usually in absolute contact immediately after the accident, and experience has shown that they can seldom be brought and *maintained* in absolute contact subsequently. There is no bone in the body which under such circumstances is ever expected to unite by bone. If it does it is a rare and exceptional event, and does not occur until after many months or years of confinement of the limb. Why should it happen with the patella and not with other bones? There is no reason why it should; but there are several reasons why it should not, which do not apply in the cases of most other bones. The disadvantages under which it labours in this regard are peculiar, and nearly or quite equal to those which exist in the case of an intracapsular fracture of the neck of the femur. The synovial fluid is greatly increased in quantity, and pressing forwards occupies the space between the broken surfaces, and by distending the capsule actually increases the separation. There is very little soft tissue either in front of or behind the patella. Posteriorly the thin plate of cartilage is torn entirely across, except in those rare instances which I have supposed possible, but the existence of which has not been actually proven, where the fragments may be supposed to have separated in front, but not posteriorly. You must not forget that this fracture is almost invariably caused by great muscular action, and if under this immense strain the bone has given way, the thin and delicate cartilaginous plate posteriorly would offer only a feeble resistance to the action of the muscles and the separation would be completed. In this fracture made upon the cadaver with a chisel the synovial membrane was not torn and the joint was not opened, but the circumstances are different from those in which a fracture usually occurs in life; in this fracture produced by a chisel there was no muscular action, and the fracture could be limited to any point. You see then how difficult, if not impossible, it is to supply the bony material. There is absolutely nothing left behind the line of fracture from which repair of any kind can proceed.

In front again the periosteum is torn entirely asunder, and so also are the few scattering fibres of the tendon of the quadriceps. Even the posterior wall of the bursa patellæ is probably torn in most cases, and

nothing is left in front of the line of fracture but a thin tegumentary layer, the posterior surface of which, corresponding to the fracture is, in case the bursa has been torn, a synovial surface, which I need not tell you is unfitted for the process of repair. In the case of ordinary fracture of the long bones there is always an abundance of soft tissue to aid in the repair, and there is also in almost every case a considerable portion of periosteum which is untorn, and which bridges over a part of the chasm and contributes very largely to the future callus; the fragments are also in most cases in actual contact; and yet even under these most favourable circumstances bony union sometimes fails.

If the fragments are not therefore in actual contact there is usually, I will repeat, no source of supply for reparative material but this thin tegumentary layer in front and the lacerated fibres of the tendon of the quadriceps on the inner and outer margins of the patella, of which two, it is probable that the latter furnishes the chief supply. An examination of the lesions in the aponeurosis, which hug closely the lateral margins of the fragments, would lead us to conclude that this must be the chief source of the supply; and the fact that the new fibrous bond is usually more abundant or stronger on the margin of the fracture sustains this opinion.

In order that you may comprehend the difficulties fully in this case, where the fragments are not in actual contact, I must again call your attention to the fact that the synovia, always increased in quantity, presses up between the fragments, bathing the broken surfaces, and washing away the reparative material almost as fast as it is deposited. You will see that nothing but absolute and firm contact, such as will prevent the admission of the synovia between the fragments, can encourage a hope that the repair will be effected by material supplied by the broken surfaces themselves.

Let us not lose sight of the statement made in the opening of this lecture—namely, that a fibrous union is probably as useful as any bony union which can be obtained. No one has ever claimed that it is not easy to get a strong fibrous union where the original separation is not very unusual; and my purpose is to congratulate you on this fact, inasmuch as it is so difficult, and in most cases impossible, to maintain absolute contact and thus secure bony union.

Now we will consider some of the extreme, or, as they think, more certain expedients to which some surgeons resort to obtain a close bony union. Regarding a bony union as essential to the most perfect success or as required in order that the limb may hereafter be the most useful—an opinion which I do not entertain—they have sought to insure immediate bony union by the use of mechanical appliances which operate directly upon the fragments, and not indirectly through the integuments; with steel points or wire they propose to place the fragments completely under their command. Of which measures I affirm my belief that they have not in general, if ever, accomplished their purpose; that they are more or less dangerous to the limbs and lives of the patients, and that inasmuch as the other methods which insure a fibrous union, which will be as useful as a bony union, in all recent cases, are perfectly safe, surgeons cannot be well justified in adopting either one of them.

Let us first consider what is known as "Malgaigne's method," or the method of holding the fragments by metallic hooks. The instrument which I show you is the instrument invented and used by Malgaigne. His experience with these hooks, as related in his "Treatise on Fractures,"

is contained in four cases. (Although Druitt says, I do not know on what authority, that he had in 1858 treated eleven cases by this method satisfactorily.)

In two of these cases the hooks loosened and slipped, tearing the flesh and had to be removed after a short time. In one case, that of a boy eleven years old, the patella was *thought* to be united by bone; in one the union was thought to be partly bony and partly ligamentous; in one the character of the union is not mentioned, and in the fourth case, in which the hooks were not employed until after three months, the fragments were at first supposed to be united by bone, but it was soon found that no union at all had taken place. No evidence is presented that either of these patients had any more useful limbs than is usually obtained by other modes of treatment. Nor is there any substantial evidence that any of these had united by bone; no more indeed than is often presented after other methods of treatment, but in which the lapse of time or the autopsy has almost constantly proven that it was not united by bone.

I will now read to you what Malgaigne himself says of the value of bony union.

"On the whole, ossific union, taking place in the majority of cases with some separation of the fragments, the bone remains elongated and deformed; and I am not sure that this deformity does not interfere as much with the functions of the knee as union by fibrous tissue would. Boyer relates a case of this kind; the patella was elongated by about six lines; the patient was obliged to use a cane for a year, and thirteen years afterwards the flexion of his knee was still limited. I have myself published a case of bony consolidation obtained by M. Blandin; the increase in length of the patella was estimated during life at eight lines; at the end of the fourth month the leg could hardly be flexed five or six degrees. I sought in vain to find this man subsequently."

In both of these cases the bony union resulted in all but complete ankylosis. Certainly these examples do not argue much for bony union as compared with fibrous union.

Here is another paragraph which I will read you from Malgaigne; speaking still of bony union, he says "I have sometimes seen it myself, but what is very essential, never in simple transverse fractures. There was always at least one small splinter broken off from one of the fragments."

Speaking of the difficulty of adjusting and maintaining the hooks in position a long time, he says he has not been able to remedy it, and he alludes with his usual frankness to the cases of M. Roberts who failed completely with his (Malgaigne's) hooks to approximate the fragments; and finally he refers to one of his own cases in which, for some reason not stated, he removed the hooks and substituted pressure, "but the little wounds became inflamed, and erysipelas ensued."

Hear what Volkmann has recently said on this subject: "That Malgaigne's hooks, have caused ulceration of the joints and death of the patient in a number of cases, is only too true; I myself know of two which occurred in the practice of friends, and which were never published, and another sad experience met with in my own clinic a number of years since, of which I shall speak directly." Gross says they are apt to cause an erysipelatous inflammation. Erichsen speaks of their causing pain and irritation. Bryant says they are objectionable for the same reason. I have myself heard of a case in one of our city hospitals in which serious results followed the use of these hooks.

Agnew, in his excellent "Treatise on Surgery," has spoken very em-

phatically in regard to Malgaigne's hooks. I quote from the first volume, p. 980, of his recent publication.

"Once I have seen death follow the use of this infernal machine from an erysipelatous inflammation extending into the joint and giving rise to abscesses both within and without the articulation. No advantage whatever results from the close contact of the fragments accomplished by the instrument; it is rather a disadvantage, as the tendency to refracture is increased by the very closeness of the tension, the intermediate bond not being as strong as the ordinary fibrous tissue which fills the gap when the pieces of the bone are a short distance apart. Three times I have seen the union broken a few weeks after the patients treated by this method had been discharged from the hospital."

The only decided advocate of Malgaigne's hooks known to me in this country is Dr. R. J. Levis, of Philadelphia, who has modified the hooks, substituting two points for the four in the original instrument. The principle remains the same. In the *Medical and Surgical Reporter* for 1878, he has reported four cases, one of which was treated by Malgaigne's hooks, and the result was a separation of the fragments to the extent of half an inch. It is not stated that it united by bone, but he calls the result "good." The other three cases were treated by his own modified hooks. In one there is said to be "some separation"; one was refractured soon after he left the hospital, and in the third an abscess resulted which he thinks might have been due to the original injury. In one of the four cases the union is said to be ligamentous and in none is it declared to be bony.

Perhaps Dr. Levis has published other cases, but I cannot see in these four any thing to remove the prejudice which most surgeons, in common with myself, entertain towards this instrument. It is not sufficient for any surgeon to say that he has adopted this method in four cases without any disastrous results; nor indeed that he has had no mishaps in 20 or 25 cases. Other surgeons have met with them much oftener than this, and a method which exposes to suppuration of the joint, and death as a consequence solely of the apparatus employed, cannot be commended even if these results do not happen oftener than once in fifty cases; and especially when there is no satisfactory evidence that the average results are any better than by other and perfectly safe methods.

There are many other methods which have from time to time been suggested and practised, for the purpose of effecting a bony union of the fragments; a result which, you will remember, I have in the opening of my remarks to-day declared to be undesirable, and therefore certainly not to be sought for at the risk of life. Most of the plans I shall now refer to are in a greater or less degree attended with this risk.

Severinus, an Italian, proposed to make an incision into the joint, exposing the fragments, and then to freshen the broken surfaces and bring them together. This was nearly 300 years ago, when surgeons did not pretend to have any specific for preventing inflammation after wounds of large joints, such as Mr. Lister thinks we possess to-day. It certainly was a very bold or rather I would say a very foolish and reckless suggestion, and it is gratifying to know that he never practised it himself. It has, however, been actually done lately by Van der Meulin, Cameron, and Rose, with antiseptic precautions.

Dieffenbach is said to have cut the rectus femoris and ligamentum patellæ, the operation resulting in some improvement; but so good a surgeon and anatomist as he, ought to have known that the cutting of the

rectus femoris alone would not affect materially, if at all, the upper fragment. It would be necessary to cut the whole of the quadriceps; and to cut the ligamentum patellæ would be to substitute an ununited ligament for an ununited patella. The joint would in all probability be entered and the most disastrous consequences might ensue. Malgaigne doubts the faithfulness of the report of this case, and I doubt it also. Gould has more recently cut the quadriceps alone; at least we are told so, but I do not know the result.

Surgeons have occasionally, in the case of old, ununited fractures, introduced a tenotome subcutaneously and roughened the broken surfaces. This I have seen two or three times myself, but there has been no result whatever, so far as the union was concerned; nor is it probable, considering the peculiar conditions under which the fracture exists, that any benefit can be obtained from this expedient.

MM. Ollier and Goujon have recently injected fresh marrow cells between the fragments, and Dr. Wyeth, of this city, has repeated the experiment in old, ununited fractures; but neither of these gentlemen have obtained any results; nor do I very well see how they can reasonably expect any result, since the osteogenic materials must be placed, not actually between the fragments, for that would be in the joint itself, but only in the very thin tegumentary covering over the point of fracture.

Prof. Kocher, of Berne, Schede, and Volkmann, have recently advocated and practised opening the joint, with antiseptic precautions, for the purpose of letting out the blood, and for the purpose of securing bony union; but Kocher thinks this cannot be accomplished satisfactorily when the blood has become coagulated. He advises, therefore, that it be done immediately, or as soon as the fracture comes under the surgeon's observation.

The objections to this method are, first, that it is dangerous despite antiseptic precautions; second, that blood in any considerable quantity is seldom effused into the joint; third, that we can never be sure of being able to remove any but a small portion of the blood; fourth, that even if successful, we have in only a slight degree removed the obstacles in the way of bony union; and finally, that bony union is not desirable. As to the danger of suppuration from the presence of blood in the joint, I have not in a very large experience seen such a result from such a cause. Yet I can conceive of a case in which the extravasation may be so great as to render the evacuation of the blood advisable to prevent suppuration. But such cases must be exceedingly rare, and considering all the objections which exist, you will probably do better if you never adopt the suggestions of these gentlemen. There is more danger in this indiscriminate opening of joints than in omitting to open the few cases in which it might possibly prove serviceable.

I think it was Schede who first proposed and practised, for the purpose of effecting bony union, introducing a large needle, armed with a silver wire, through the joint; introducing it below the lower fragment, and bringing it out above the upper, and then drawing the fragments together. The operation being done antiseptically. He says he has done it three times and obtained bony union—a statement, the correctness of which Kocher ventures to doubt.

Kocher has modified this operation by first making incisions through the skin, above and below the fragments, and then introducing the needle and silver wire. He says he has done this twice, but he confesses that he

did not prevent separation of the fragments, and he does not pretend that the union was bony.

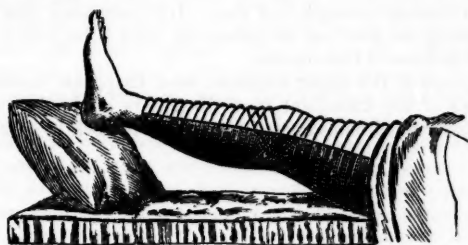
Volkman, as I have already told you, confesses to having had a sad experience with Malgaigne's hooks, still however seeking for some mode of obtaining bony union he has employed what he calls the "tendon suture." A common ligature was passed through the tendon of the quadriceps and of the patella, and by these means he tied the fragments together. In one case he thinks he had bony union, in one a "satisfactory result," in one it was "all that could be desired," and in one the patient died! Although in this case the ligature was in place only one quarter of an hour, but the ligature had, as the autopsy showed, penetrated the joint.

Such are some of the expedients for the purpose of procuring bony union to which surgeons have from time to time, and especially of late, resorted. I confess, gentlemen, it does not increase my respect for the judgment of surgeons who adopt any or most of these methods. Their performance does not exhibit simply a rudeness of conception as to what it is desirable to accomplish, but some of them an absolute lack of appreciation of danger in surgical operations. They seem to me to be the devices of mechanics and not of surgeons.

Dr. Hamilton's Method of Treatment.—In nearly all cases the adjusting retentive apparatus may be applied at once. If exceptions occur it will be in those cases in which the patella has suffered from a direct and severe injury, and the swelling and tenderness are unusual. The single inclined plane recommended by me in the earlier editions of my work on "Fractures and Dislocations" I now very seldom use. It is in all respects sound in principle, but it is unnecessarily cumbrous for ordinary cases. A light splint and a cotton roller are the only essential parts of a proper apparatus.

Here is a patient to whom this dressing has been applied. The best materials for a splint now known to me, in the case of a fracture of the patella, is gum shellac cloth, made of about six thicknesses of cotton cloth saturated with gum shellac. It is made by the hatters, and can always be obtained from the instrument makers in this city at a moderate cost. The same material can be used for splints in the case of most long bones. It is not patented. The splint must be long enough to extend from above the middle of the thigh to near the ankle, and wide enough to envelop half the circumference of the limb. This being moulded to the back of the limb, must be covered by a complete sack of cotton or woollen cloth, after which it is to be laid against the back of the limb; and first a roller is applied just below the knee by several circular turns, including both splint and leg; second, the roller is carried obliquely above the patella, and then around the limb and splint in a circular manner. In short, by oblique and circular turns the fragments are to be gradually drawn together—the integument being meanwhile, as far as possible, kept from doubling itself between the fragments—and the oblique turns gradually approaching each other in front of the patella until the whole is covered in. Third, a separate roller is applied to the lower part of the limb and splint, and a third to the upper part. Fourth, all the turns of the rollers are carefully stitched to each margin of the cover of the splint. Fifth, the limb is laid in bed with the foot resting upon a pillow so as to raise the foot about six inches. If you deem it necessary, the foot may be secured in this position by some permanent apparatus, or by being placed in a swing; only that the importance of keeping the foot permanently elevated during the first two or three weeks must be recognized.

The limb must be examined daily, and as soon as the bandages about the knee have slackened from the subsidence of the swelling or from any other cause, with a large needle and strong linen thread, they must be tightened by overstretching; and especially must the oblique turns which pass above and below the fragments be thus tightened. This may have to be repeated every day for several days, but it will seldom be found necessary to remove and reapply the bandages within the first two or three weeks. At the close of the second or third week the dressings should be removed and the limb examined, when it will generally be found that the upper fragment is nearly or quite immovable, unless considerable force is applied; it is therefore no longer liable to be drawn up by the ordinary action of the rectus or quadriceps, and we can give to the joint a little motion without in any degree increasing the separation of the fragments; but to avoid all danger we may press down the upper fragment while we move the joint gently.



The same dressings are then to be reapplied and with the same care. From this time forward there can be no objection to the patient's being about on crutches, since the ankylosed or semi-ankylosed condition of the upper fragment will prevent its being influenced by the ordinary action of the rectus; but regularly at night, or at least every second day, the splint should be removed and slight passive motion employed.

Ordinarily we may discharge the patient at the end of six or eight weeks from our immediate care, but with instructions to continue to wear the splint or some equally firm substitute eight weeks longer. It may be removed, however, whenever he is in bed. The necessity of wearing the splints so long is found in the great frequency of refractures during the first month or two after the dismissal of the patient; that is to say, after the splint has been removed, and within four months from the date of the receipt of the injury. Laced or elastic knee-caps do not give the required support; they give way under any considerable strain upon the joint, as experience has shown in several instances. And the same accident would be just as liable to occur if the fragments had united by bone, or even more so. Remember that we cannot apply the same rules here that we do in fractures of long bones. When these latter bones have united, and the limbs are put into use, the point of fracture is not subjected to the enormous cross-strain to which united fractures of the patella are subjected—I speak particularly of fractures of the shafts of long bones—and we can generally permit these patients to go about safely without splints at the end of eight weeks. It is very different, as you must see, with the patella.

Please, gentlemen, remember all the details of the treatment which I have recommended to you. They all contribute to the best results, and

no one of these details can be safely omitted. If you wish to avail yourselves of the results of my experience, you must follow minutely my directions. Do not use compresses, or adhesive strips, or elastic bands, or metallic, or other hard adjusters, or plaster-of-Paris, or any other form of immovable dressings. Do not let the patient get up on crutches in less than two or three weeks. I have good reasons for advising you thus, some of which I have given, and others of which I have not time now to give. Avoid every method, whether new or old, which endangers in any degree the limb or the life of the patient, since there is before you a simple and perfectly safe method, which assures to your patients as good and probably better results than the dangerous methods.

There is one thing more which I had almost forgotten to say: when, at the end of four or five months from the time of the original injury, the splint is wholly laid aside, do not apply a knee-cap or any bandage to the limb, but let the patient use the muscles of his leg freely, so that they can recover their normal strength and size. It is surprising how much the ability of flexing the limb and to sustain the body is improved under free and unrestrained use of the muscles.

The ankylosis of the upper fragment soon disappears under use; and the ankylosis of the knee-joint itself disappears gradually, in the same manner. Under no circumstances is it proper to seek to overcome it by force.

ABSTRACT OF A CLINICAL LECTURE ON THE TREATMENT OF SOME FORMS OF EPILEPSY.

Delivered at the Hospital for Epilepsy and Paralysis.

BY J. S. RAMSKILL, M.D. LOND.,

Junior Physician to the Hospital, Consulting Physician to the London Hospital.

GENTLEMEN: The boy I show you (L—) says he is eight years of age, and that he has been ill eight months. He looks his age, and is fairly intellectual. He had been at school for five years before the accession of the fits. The shape of his head is good, and there is no particular vaulting of the roof of the mouth. I always examine the mouth both with a view of ascertaining the height of the roof and the state of the teeth, both as regards caries and overcrowding. About the age of puberty the latter condition is not a very rare cause of epilepsy. And it is always well to exclude every source of irritation arising from that most reflex nerve of the body, the trigeminus.

We have no neurotic family history, and no account of any previous illness to note. Examination of the heart and lungs reveals nothing, neither does the ophthalmoscope. The abdomen seems full, some gurgling sounds are heard on palpation, and it is more doughy than natural; but on account of a certain amount of superficial fat, the state of the colon and viscera can hardly be made out. Now, about a month before the commencement of the fits, the boy complained of a bad cramp in the left wrist and upper half of the hand. It remained only a few seconds, but recurred at different intervals: sometimes twice or three times a day, and next day only once. About the end of a month he was knocked down by a blow on the left side of the head. He did not lose consciousness, nor was he sick, neither had he subsequent headache.

Next morning he had a fit, and several during the next fourteen days; then he was free for a month. They then returned, but only by night; but during the following month they came both by night and day. We learn from the parents that the character of the fits is as follows: He first has the cramp in the left hand and wrist, screams, and also, sometimes, bites his tongue; is universally convulsed, but most so on the left side. The fits last only a few seconds. He occasionally has one in the day, but usually eight or ten every night. It is observed that if he falls asleep during the day he has a fit. There are no sequelæ of note to the attacks.

Such is the aspect of the patient and the history of the case. The first point to decide is this: Is the patient epileptic? and, if so, is the disease idiopathic and primary, or is it secondary or sympathetic? It would be waste of time to argue the first question. The case is clearly epileptic; but it is quite a question as to whether it be idiopathic or not. Modern science would at once say it is centric, and the particular part of the brain most involved was the right ascending frontal convolution, an explosion from which spreads upwards, downwards, and backwards, involving an area which might be mapped out by the presence of convulsion or spasm in the muscles engaged. The aura does not consist of an irritation going to the brain, although a ligature above its seat may stop the fit. You all know aura may exist with some coarse centric disease, and a ligature may still stop the accession of the fits. This, I say, is the received opinion; but I am not sure of its universal truth, especially with regard to unfelt aura, which we must suppose to exist. An unfelt aura seems a contradiction in terms; but it is not so, for, as far as I can make out, in the case of a patient who one day has a fit with an aura, and next day another of exactly the same extent and character without any, there must have been a similar, or the same, cause in both.

I think, perhaps, the explanation lies here, that the spread of the discharge was too quick, that the patient had not time to perceive the aura before the attack became general, or before consciousness was lost. But we find on examination the boy has often the aura without a fit. Then I look on his aura as a fit—a minor and localized one. A greater question to my mind is this, Are not most epilepsies eccentric rather than idiopathic and centric at first? Does the existence of an aura really settle everything? Neither physiology nor pathology helps us, but I think practice can. If you prevent both aura and fit, by slight treatment, which cannot reasonably be presumed to have any influence on the cerebro-spinal centres, it is a fair supposition that the cause is not centric, but originates within the sphere of action of your treatment. But I do agree to this opinion, that eccentric soon passes into centric idiopathic epilepsy, or perhaps, that you may, after one has generated the other, have both forms of disease in the same subject. Be this so or not I am inclined, and I dare say you are, to say with the celebrated Trousseau, "Good heavens, gentlemen, a little less science—a little more art." The question then is what line of treatment shall we pursue. This is the programme we adopted.

(a) To see if we could find any source of irritation in the abdomen, "for of all the regions of the body there are none which reflect more strongly on the brain than the intestines and visceral organs."

(b) To give what remedies we know are able to allay the reflex excitability and force of the cerebro-spinal centres.

With the first object in view, vermifuge aperients, santonine and castor-oil, is the usual combination for children, to be given sufficiently long to make sure of the result.

In our case the result was *nil*. Had a worm been expelled the fits might have vanished; but this is not the rule, unless your treatment has commenced very early

in the case after the first attacks. The lumbricus may be dislodged, but the central excito-motor region has taken on morbid action, and the epilepsy remains. Still, in these cases, I always think there is most hope, and most room for treatment; for if the irritation of a lumbricus could by a certain route in the nervous system produce a morbid result on the centre, some remedy acting through the same route may lessen, deaden, and finally stop that morbid process in the same centre.

Let us continue our examination of the abdomen. I want to know the condition of the colon. We have found the abdomen full—that is, tumid, bigger than it should be, but, without chloroform, we cannot make out anything beyond gurgling.

By the light, then, of experience we make the assertion, that there is probable defect of the colon, as to secretion, spasm, contraction, and alternate dilatation of its calibre. In a post-mortem of an epileptic by Vanderkolk he says: "We found in the abdominal cavity the colon and sigmoid flexure very much dilated and lengthened, the latter ascending to the transverse colon. Above and beneath the sigmoid flexure were many constrictions, which higher up alternated with dilatations; the cæcum, too, was very dilated." This is a severe case; but one cannot help observing in the records of post-mortems the frequent occurrence of a strictured and dilated colon.

What cases of mental depression, of melancholia, have we not all seen associated with loaded, and probably sacculated, colon! In one series we seem to get an irritant; in the other an inhibitory action on the nerve centres. I recollect an old practitioner saying (before the advent of bromide) that a daily morning dose of *beaume de vie* was of more service in epilepsy than all the medicines in the *Pharmacopœia*.

To recur to our patient, we kept him in the hospital ten days without treatment, beyond the prelude of aperients, to see his exact condition as to the kind, number, and duration of the fits.

On Oct. 13th he had 5 fits; 14th, 7 fits; 15th, 15 fits; 16th, 13 fits, and one in the afternoon, when he had fallen asleep; 17th, 9 fits; 18th, 6 fits; 19th, 7 fits; 20th, 15 fits; 21st, 9 fits; 22d, 15 fits. The fits turned out as described. On Oct. 23d we ordered thirteen grains of bromide of potassium, three grains of iodide of potassium, and eight grains of carbonate of ammonia, three times daily, with this result: Oct. 24th, 9 fits; 25th, 7 fits; 26th, 11 fits; 27th, 9 fits; 28th, 13 fits; 29th, 9 fits; 30th, 9 fits; 31st, 10 fits. The same rate continued until Nov. 4th, when we added more ammonia in the shape of ammoniated spirit. The rate began to diminish, as for the consecutive days we got 7, 6, 6, 7, 2, 8, 6, 5, 6, 5—plus one in the day—then 5, 6, 9, 5, and about the same rate until Nov. 27th. On that day a mixture of equal parts of chloral, camphor, and vaseline was ordered, a portion equal to a small teaspoonful was to be rubbed into the scalp every night. The mixture of bromide, iodide, and ammonia, to be continued, and a pill containing equal parts of aloes, valerianate of zinc, and extract of conium, given every night.

The result of this treatment was, that we had no recurrence of fits of any kind for more than five weeks. Then we had one fit each night for three nights, and I confess that I was glad to see them return. Vanderkolk quotes some cases showing the danger to life which may arise from the prolonged freedom from fits. And, as a general rule, it may be said that in chronic epilepsy the longer you manage by treatment to prolong the interval between the attacks the more severe the following fit will be. Death occurs from asphyxia or from congestion of lungs and coma. It is astonishing that apoplexy is not frequent, but to me it is simply unknown as a result of the most violent and prolonged attacks.

I have had experience only of three fatal results; all occurred after a so-called cure had been made; all in the night, and the patients were found dead in the morning. What I wish you to remember is that after a prolonged interval of freedom you must apply some counter-irritant, such as a seton, issue, or leeches, to prevent or to break a too violent explosion.

To return to our case, To what is the improvement due? What is the rationale of the action of the means employed? Perhaps we should do best to see these points illustrated in another case.—*Lancet*, Feb. 26, 1881.

Hospital Notes.

BELLEVUE HOSPITAL, NEW YORK.

(Service of Dr. AUSTIN FLINT, Sr.)

Acute Articular Rheumatism. Treatment with Salicin and Alkalies.

(Specially reported for the MEDICAL NEWS AND ABSTRACT.)

Robert C., æt. 26, Irish, porter; admitted Feb. 22, 1881. The patient confesses to the occasional excessive use of alcoholics. He has been employed in the kitchen of a hotel, where he was subjected to frequent alternations of heat and cold. On Feb. 18, he was attacked with acute pain in his left ankle, accompanied by heat, redness, and considerable swelling. The right ankle was next attacked and both knees, both shoulders and the fingers of both hands were subsequently, successively, involved in the inflammatory process. On his admission, Feb. 22d, all the above-named joints presented the signs of acute inflammation. A soft, blowing systolic cardiac murmur was heard at the apex, and was not transmitted to the left. There was no cardiac enlargement. Temperature 103° , pulse 98, respiration 28. Inasmuch as the blowing endocardial murmur was regarded as the evidence of endocardial inflammation it was decided to employ salicin rather than salicylate of soda. Two-hourly doses of salicin, grs. xx. with acetate of potassium, grs. xxx. were prescribed. No other remedies were administered. At the beginning of the treatment the urine was acid and high coloured, with a specific gravity of 1032. It contained no albumen and no sugar.

Feb. 23d. Pain in the joints has been considerably relieved. The urine still remains acid. Temperature, A. M., 103° ; P. M., $102\frac{1}{4}^{\circ}$.

24th. The pains, redness, and swelling of the joints have markedly diminished. The urine is alkaline. Temperature, A. M., 102° ; P. M., 102° .

25th. The joint symptoms have almost disappeared. The urine is alkaline. The cardiac murmur still persists. No pleuritic or pericardial complications have appeared.

March 1st. The acute inflammatory symptoms have disappeared. The temperature has remained at about 100° since the last note. The alkali is now discontinued, but the salicin is still administered, as before, and has occasioned no gastric disturbance.

3d. All febrile symptoms have ceased. Temperature $98\frac{1}{2}^{\circ}$. Only slight stiffness of the limbs remains. The cardiac murmur is indistinctly audible.

Hystero-Epilepsy; Phases like those described by Charcot; Obstructive Dysmenorrhœa; Treatment by Dilatation of the Cervix Uteri.

A fairly intelligent Roman Catholic aged twenty-one was admitted into Dr. Sansom's ward in the London Hospital, on Aug. 20th, 1880. She lived from the age of thirteen to seventeen in Canada. Her mother's father died of consumption, but there was no neurotic family history. As a child she had good

health, but whilst in Canada, and even after, she had suffered much from headaches, and from frequent attacks of vomiting. She first menstruated at the age of eleven; had always been very irregular; her menses were scanty, lasting never more than three days, and always accompanied by severe pain, both constant and paroxysmal, referred vaguely to the back and to the front of the abdomen, and coming on at the commencement of the flow, and lasting till it ceased.

She was first taken with fits in April, 1880, in which she lay for about five minutes in a rigid condition, and with her eyes shut. She at the same time had great impairment of memory. These fits came on about once a day on an average till the middle of July, when they became much more frequent, and of a more violent character.

She had five fits on the first day of admission, lasting from a quarter of an hour to an hour, and several similar fits on many days following. A fit could at any time be excited by pressure on the ovaries, and during its manifestation pressure on the ovaries would either arrest it or alter its character. Pressure on other parts of the body did not produce a fit. They were most frequent about the time of a menstrual period, and she also seemed to be more liable to them after being visited by the priest. Between the fits she seemed cheerful and intelligent, but suffered a good deal at times from headache, which, she said, felt as "though nails were being hammered into her head."

The fit consisted of a series of stages: 1. They began by her head being thrown up, and inclined slightly to the right, while her eyes were turned up and to the right, and her mouth widely open. Her limbs were placed in a position approaching that of crucifixion, her legs extended and lying together, while her arms were held out straight nearly at right angles to the trunk, her fingers being over-extended, bent back towards the dorsum of the hand. 2. After lying quite still in this position for a short time she began to make lateral and to-and-fro movements with the tongue, and to froth at the mouth (she never bit her tongue). Her head began to move slightly from side to side, then more violently, till at last her whole body was implicated in a violent side-to-side movement. 3. These movements were soon exchanged for violent and extreme extension and flexion of the trunk; at one moment she bent forwards so that her head almost touched her feet; the next, threw her head violently back on to the bed. 4. She then again assumed the crucifixion position, and on some occasions arched her back in a rigid opisthotonos. 5. Finally, she drew several long breaths, her limbs relaxed, and she turned on to her left side, placed her hand over her heart, and began to cry; she then sat up, smiled, and said she felt tired and weak. During the fit the corneæ were insensitive, and pricking her with a pin caused her no pain in any part of the body.

Treatment was directed to the relief of the dysmenorrhœa, which Dr. Herman considered to be due to a narrow cervix. On Sept. 27th bougies Nos. 4 and 5 were passed; their passage excited a fit. On Oct. 5th bougies Nos. 6, 7, and 8 were passed; a fit again occurred. On Oct. 18th bougies Nos. 8, 9, and 10 were passed; a fit occurred afterwards. She at the same time took one grain of valerianate of zinc three times a day. Her fits soon began to diminish in frequency, till by the middle of October she did not have more than two a week. Her menstruation also became easier, and the pain was much lessened. Pressure on the ovaries produced much less effect. She menstruated on Nov. 30th and Dec. 1st without pain for the first time in her life. She had no fits after that, and when she left the hospital on Dec. 7th she had not had a fit for more than a month.—*Lancet*, March 5, 1881.

MONTHLY ABSTRACT.

Anatomy and Physiology.

The Vessels of the Retina.

Professor HIS, in the third part of his *Archiv* for 1880, gives an interesting description of his observations upon the distribution of the vessels in the retina of man and some animals. He makes this communication *à propos* of a paper by Dr. Hesse, who has demonstrated the existence in the retina of the rat of an internal arterial and an external venous layer of capillaries. Professor His depicts the *arteria centralis* in man as running in the nervous fibrous layer, and giving off from either side lateral capillary branches, which he names the *arteriæ afferentes*. These leave the main trunk almost at right angles. After a short course they divide and subdivide dichotomously, and form a tolerably distinct network of arterial capillaries, the individual vessels passing in and out through the spaces of the inner granular layer, where they form the deeper-lying or more external venous plexus. These, again, transmit the blood they contain into the *venæ efferentes*. The *arteria centralis retinæ* possesses a muscular tunic whilst it is still imbedded in the optic nerve; but this coat becomes thinner as the artery approximates the *lamina cribrosa*, and loses itself after the artery has traversed that lamina. In the retina itself the arterial branches are surrounded by a tunica adventitia, which gradually becomes thinner. There are no horizontally running capillaries in the molecular layer. All the vessels here have a radiating direction. Another point which he believes he has made out, though he is not quite certain, is that the portion of the optic nerve which is situated distally to the *lamina cribrosa* is provided with a very close network of large capillaries.—*Lancet*, Feb. 26, 1881.

The Atrophic Lines on the Abdomen in Pregnancy.

The appearance of silvery, riband-like streaks on the abdomen, the result of atrophy of the skin, as a result of stretching of the integument, after pregnancy, or distension of the abdomen otherwise brought about, is not merely familiar to medical men, but to patients; and the minute anatomy and conditions of origin of this change have been pretty well worked out, thanks chiefly to the labours of Credé, Schultze, and Hecker. Drs. KRAUSE and FELSENREICH have investigated them from a new point of view, viz., as an index of the tension of different parts of the abdominal wall, and a measure of the degree to which they regain their former state when that tension is removed. The best anatomical researches into this form of atrophy of skin which had been made previously are those of Küstner. He has shown that the change is often not merely in the epidermis, but that there is a solution of continuity in the deeper layers of the skin also. At the lines of atrophy, the cells of the horny layer of the epidermis are arranged more in rows which are regularly transverse to the course of the atrophic striæ than in the healthy integument; and the minute depressions and elevations of the natural skin are here smoothed out. Länger has also investigated the subject, and has shown that the bundles of fibrous tissue, which in the reticular layer of the normal corium cross one another so as to make the interspaces between them rhombic in shape, run transversely and nearly parallel to one another, across

these atrophied parts. The papillæ also are here set in transverse rows; but if the band be a broad one—that is, if the stretching have been considerable—they may be so distant from one another as to make it difficult to perceive what is their arrangement. The bloodvessels also run transversely, instead of forming the usual network.

This was the state of the subject when Krause and Felsenreich applied themselves to its further investigation from the point of view we have indicated. They took as the field of their researches women pregnant for the first time, because in them the changes due to stretching of the skin would of course be seen at their maximum. Their method was this. They used a wooden stamp to imprint upon the abdomen a circular mark about an inch in diameter. The marks were made with aniline blue, which, after a trial of many other pigments, they found to be that which would best and longest resist friction and moisture. Being made with a stamp, the marks were of course all exact in shape and equal in size. A circle was marked, having the umbilicus as its centre; and from this as a starting-point rows of circles were imprinted, running up to the ensiform cartilage down to the symphysis pubis, transversely from side to side across the abdomen, and obliquely on each side to the right and left anterior superior iliac spine. These marks were made before labour; and on the ninth and tenth day after delivery (this day being taken because it was the last of the patients' stay in hospital) they were again examined. The diminution in size of these circles showed, of course, the amount of contraction of the skin at each place, and the alteration in their shape the direction in which contraction had occurred. The first thing found was that the post-partum contraction was not regular; the vertical row of circles, instead of being, as when made, a perfectly straight line, now was undulating and zig-zag. The amount of shortening of the line connecting the umbilicus with the symphysis pubis was from half an inch to two inches; of that joining the navel to the ensiform cartilage did not amount to more than half an inch. The lines going from the umbilicus to the iliac spines were at most only shortened an inch, and there was often more than half an inch of difference between the two sides, even when before labour their length had been identical. The diminution in the circumference of the belly at the umbilicus varied from about five to seven inches. By comparison of the circles forming the lines mentioned it was found that along each line the amount of post-partum contraction of the skin increased as the umbilicus was approached. It was greater along the lines radiating from the umbilicus than in the direction perpendicular to them. An exception to this, however, has to be made in reference to the linea alba, in which the contraction was less in the vertical than in the transverse direction. A comparison of the circles showed that, although the contraction of the linea alba above the umbilicus was less than that below, yet that in other parts of the abdominal wall there was more contraction above than below the navel—a fact which the authors suppose due to the great stretching of the parts below the umbilicus having deprived them of their elasticity. It results from these observations, that above the umbilicus the contraction of the abdominal walls after delivery is greater in a direction transverse to the linea alba than parallel with it, the direction of maximum retraction being a line running downwards and towards the linea alba. At the level of the navel the contraction takes place towards that point; and below this line the direction of its maximum is indicated by a line running upwards and towards the linea alba. The reason why the contraction is less in the direction of the linea alba than transverse to it is a simple one. It is this: that such contraction is effected by the fibrous bundles coming to cross one another at more acute angles. In the linea alba the fibrous bundles are already nearly parallel, and therefore there is little room for this change to take place. According to Länger,

the fibrous bundles of the skin of the abdomen form rhomboidal meshes, the long diameter of which is parallel with the ribs. It will be seen that the statement of Länger explains the changes observed by Krause and Felsenreich.

Immediately around the navel contraction takes place equally on all sides and towards that point. The course of the atrophic lines is this. Near the linea alba they run parallel to it. Close round the umbilicus (over the area in which contraction takes place uniformly towards it) they form a confused network around that point, striæ crossing one another in all directions and at all angles. Further outwards they run concentrically around the navel. Comparing the course of the striæ with the lines described as those of maximum retraction, it will be seen at once that the former are at right angles to the latter. The atrophic striæ therefore indicate the directions in which, during pregnancy, the greatest tension has been put upon the abdominal walls.

So far as the particular facts themselves go, which Krause and Felsenreich have thus ascertained, they are not of much practical moment. The chief interest and importance is that which they suggest, viz., the relation between the lines of greatest tension, the direction of the atrophic striæ, and the texture of the tissues concerned. It remains to be seen, by equally careful examination of other parts, whether similar conditions in other parts of the body are the result of the same concurrence of causes.

The work of Drs. Krause and Felsenreich is an example of that patient labour bestowed upon apparent trifles, for which we so often have to thank our German brethren. Unimportant as they may seem to the self-styled "practical" man, investigations like these yet fill crevices in the edifice of scientific truth, and are of more value than nine-tenths of the literature which is concerned only with the production of so-called "cures."—*Med. Times and Gazette*, Jan. 29, 1881.

Materia Medica and Therapeutics.

The Antagonism of Atropia.

Dr. ROBERTS BARTHOLOW, in his third Cartwright Lecture, summarizes the conclusions of his studies upon the antagonisms of atropia as follows:—

Antagonism of Atropia and Physostigma.—1. That physostigma or eserine, and atropia are antagonistic in their effects on the pupil. 2. That they act differently, but probably not antagonistically, on the heart, unless we accept the views of Köhler and Bezold and Bloebaum—the former maintaining that physostigma paralyzes the accelerator nerves of the heart, and the latter that atropia stimulates these nerves. 3. That they are opposed in their action on respiration, physostigma paralyzing, and atropia stimulating, the respiratory function. 4. That they are not opposed in their action on the cerebrum, atropia producing delirium, and physostigma having no effect on the cerebral functions, while both cause more or less carbonic-acid narcosis. 5. That they act differently and not in an opposed manner on the spinal cord and nerves, both producing paralysis, but atropia does, and physostigma does not, impair the irritability of motor nerves. As regards the sensory nerves, physostigma augments their irritability, while atropia seems rather to lessen it, if any effect is produced. 6. That they act oppositely on secretion, physostigma stimulating and atropia arresting the secretions in general.

It follows from these conclusions that the lethal effects of physostigma, due to paralysis of respiration, are overcome by atropia by sustaining the respiratory function. The Committee of the British Medical Association assert that "the

antagonism exists within very narrow limits," but this happens to be sufficient to avert death, when doses little more than lethal have been administered; still, the use of physostigma against the lethal effects of atropia is of doubtful propriety. The paralyzing effect of physostigma on respiration may, doubtless, be successfully overcome by the suitable application of atropia.

Belladonna and Pilocarpine.—Belladonna and pilocarpus are antagonistic in their action: 1. On the secretions, especially of sweat and saliva, pilocarpus promoting, and belladonna arresting, them. 2. On the heart and arterial system, pilocarpus slowing and enfeebling the heart and depressing the vascular tonus—belladonna stimulating the cardiac movements and raising the arterial tension. 3. On the eye, pilocarpus contracting the pupil, inducing spasm of accommodation, and approximating the nearest and most remote points of vision—belladonna dilating the pupil, paralyzing accommodation, and making the vision presbyopic.

On the brain there is no real antagonism. The excitement, the delirium with hallucinations and illusions, and the subsequent coma, caused by atropia, are not affected by any of the actions of pilocarpin. The soporose state brought on by the latter, as I have pointed out, is a secondary effect, the result of exhaustion and cerebral anæmia.—*New York Med. Journal*, Jan. 1881.

Physiological Action of the Active Principle of Piscidia Erythrina—Jamaica Dogwood.

Dr. ISAAC OTT, describes (*Archives of Medicine*, Feb. 1881) some experiments which he has lately performed to ascertain the physiological action of the Jamaica dogwood—a drug which has recently been introduced as a narcotic.

His conclusions are—

1. That piscidia (the active principle) is a narcotic.
2. That it does not paralyze or excite the motor nerves.
3. That it does not act on the extremities of the sensory nerves, but their central connection—the sensory ganglia of the spinal cord.
4. That it produces convulsions, partly by stimulation of the spinal cord and partly by heightened excitability of the voluntary striated muscles.
5. That it reduces the frequency of the pulse by an action on the heart itself, probably on its muscular structure.
6. That the arterial tension temporarily rises by stimulation of the monarchical vaso-motor centre; that it soon falls, due to a partial paralysis of this centre and the heart itself.
7. That it at first contracts and then dilates the pupil.

On the Catgut Ligature.

Upon the occasion of his taking the Presidential chair at the Clinical Society at London, Mr. LISTER delivered the following address on the catgut ligature, which is full of interest for every practical surgeon. He said:—

The catgut ligature has in some respects exceeded my original hopes. I feared that its advantages would be limited to wounds in which putrefaction was avoided, and that if septic suppuration took place in a wound in which it was employed for securing the vessels the ligature would sooner or later come away like little sloughs. Such, however, has not proved to be the case. Whatever be the progress of the wound, we never see anything of the catgut, so that even surgeons who have not adopted strict antiseptic treatment have been led to employ the new material in ordinary wounds. Under other circumstances, however, the catgut has often led to disappointment. We hear of cases in which Cæsarean section

has been performed, and all has gone on well until the knots of the catgut with which the uterine wound was secured have given way, and the patient's death has been the result. Again, in ligature of large arterial trunks in continuity several surgeons have met with bitter disappointment, the case ending in disaster from secondary hemorrhage or the treatment proving abortive through the channel of the vessel becoming opened up again at the site of the ligature. Hence many surgeons have been induced to return to silk, even though using strict antiseptic treatment, rendering the silk aseptic by steeping it in suitable lotion and cutting the ends short. This practice has, however, by no means proved uniformly successful. As an instance of unsatisfactory result, I may mention a case which was recorded by Mr. Clutton in the last volume of our *Transactions*. He tied the external iliac artery under strict antiseptic precautions, and the wound healed within a week; but, as I learned from a letter which he was good enough to send me at the time, six weeks after the operation a little blister formed and fluid began to escape, forming a small scab, and in three months the loop which had been placed around the artery came away. Such a result was not at all surprising to me, seeing that what induced me to try the animal ligature was the discovery of a small abscess about the remains of a partially absorbed silk thread which I had applied in the same manner as Mr. Clutton, and, as it so happened, to the same artery. It can hardly be doubted that suppuration proceeding from the immediate seat of the ligature must be a source of danger. As an illustration of the mischief which a ligature of ordinary material may do, I may mention a case of goitre in a young woman on which I operated on January 28 last year. It was of moderate dimensions, but the effect on the respiration was considerable, and I determined to operate by Dr. Patrick Heron Watson's plan of preliminary deligation of the thyroid vessels circumferentially to the tumour (if this is effectually done the operation is bloodless); so that, as the laryngoscope, applied by Dr. Felix Semon, who had recommended the case to my care, showed that the trachea was pressed backwards considerably by the growth, I adopted a measure which I believed would, in all cases of removal of the thyroid, prove advantageous—namely, I divided the tumour in the first instance in the middle line, so as, in the case of adhesions to the trachea, to be able to remove the two halves of the growth at leisure, to dissect it off from the trachea. But in order that the carbolic ligature may be secure it is essential that the material should be very strong, so that the tissues round about the tumour, including the vessels, may be securely tightened up. I possessed no catgut which I felt was strong enough to bear the full strength of my hands, and therefore I was compelled to use the hempen ligature, after of course carefully rendering it antiseptic by means of the carbolic lotion. Six of these hempen ligatures were used—three on each side. During the first eight days everything went on in a typical fashion according to the antiseptic method. There was a small serous effusion rapidly diminishing, and we looked to the wound being healed in a few days more; but on the ninth day there was seen to be a little something of a purulence mingled with the discharge; the pus became thicker—always in small quantity; a small quantity could be pressed out from each side. In a month one of the hempen ligatures made its escape. In six days more four other of the hempen ligatures came away altogether unaltered, as may be seen on the table, where I have exhibited the hempen ligatures which came away from this case. I submitted them to careful examination. They had a sour odour, and, applied to litmus paper, gave an acid reaction—that is to say, the natural alkaline reaction of the blood-serum had been changed to acidity by some peculiar species of fermentation, inasmuch as putrefaction would have, if possible, made the blood-serum still more alkaline. On examining them with the microscope, I found the interstices of the threads of the

hemp loaded with a little organism, to which I believe I happened to be the first to direct attention as to its mode of growth, and to which I gave the name of *granuligera*, occurring in groups of twos, threes, fours, and so forth, as distinguished from the chains in which ordinary bacteria occur, and of which one form at least has been since shown by Mr. Cheyne to occur very frequently in cases treated antiseptically without any interference with the antiseptic process. I found that the interstices of the threads of the hemp were leaded with these little micrococci. It so happens I have had an opportunity within the last few days of obtaining a sample of these micrococci, thanks to Mr. Cheyne's kindness. He brought this bottle of a pure and perfectly transparent infusion of meat to a case which I had operated on a fortnight before by excision of the ankle. The skin was unbroken; we were able therefrom to operate antiseptically. The case pursued a perfectly typical course. The wounds, which were left gaping at the time of the operation, were filled with blood-clot, which remained unaltered in appearance, though undoubtedly becoming organized by that time—more or less. A little piece of the blood-clot from one of these wounds was introduced with careful antiseptic precautions into the flask of clear fluid, and you will see it is now turbid. But though, under ordinary circumstances, these micrococci may be present—as Mr. Cheyne has abundantly shown, and as the case I have referred to illustrates—without causing any evil, yet there may be circumstances in which they may prove mischievous, and the case which I have been relating appears to have been one of these. The micrococci developing in the interstices of the hempen ligature produced an acid fermentation of the serum in its most aggravated form. The acid serum became a cause of irritation, and thus the ligatures which otherwise being unirritating would have been capsuled, and in due time absorbed, became causes of suppuration. One of the six ligatures still remained unaccounted for. In due time we sent the patient home with a small sinus remaining, a little pus always discharging from it; but it was not until the middle of September last that the last ligature came away altogether unaltered. Now, gentlemen, there is no doubt whatsoever that if I had had a ligature of catgut which I could have trusted for the operation, the catgut ligature would have been disposed of within two or three weeks. Here, then, we have an illustration of the great disadvantage which may arise, even under antiseptic treatment, from the use of the ordinary forms of ligature.

Animal ligatures of another kind have been provided by Mr. Barlow in order to remove these difficulties, namely, strips of the mingled yellow elastic and unstriped muscular tissues which constitute the arterial wall, obtained by spirally cutting the aorta of one of the larger animals. But though fully admitting the efficiency of these ligatures in his hands, I cannot but feel that it is unsatisfactory, if it can be avoided, to have a special material for this particular purpose, and it will be better, if possible, to have the catgut in a thoroughly reliable condition. Catgut, of which I have samples here, is to be had all over the world in abundance. It is beautifully strong and smooth; it is prepared of various sizes, admirably adapted for all the purposes of the surgeon, and is extremely cheap. Wholesale it is sold at 12s. per gross, that is to say, 1d. per hank. But, as it comes from the maker, it is entirely unfit for the purposes of the surgeon. However beautiful it is in the dry state, it becomes soft and pulpy soon after it has been placed in blood-serum. In one of these glasses is a piece of unprepared catgut which was placed in warm blood-serum this morning—the blood of a cow—and within half an hour it was in the condition in which it is at the present time—swollen, soft, and pulpy. A knot tied upon it would hold as little or scarcely better than a piece of intestine from which the catgut is derived in the dead-house—an utterly unsatisfactory material, soft and slippery, the knot not holding in the

least. It is essential, in order to fit catgut for the purposes of the surgeon, that it must be altered in its physical constitution, so as to be no longer liable to this softening effect by the serum of the blood. This is a remarkable circumstance, that the blood-serum softens catgut more than even water does. I confess I should have thought, *a priori*, that in the case of a colloidal substance like albumen, a solution of albumen would have been much less likely than water to permeate and soften an animal tissue like catgut; but it is otherwise, and therefore we cannot trust the trustworthiness of catgut by steeping it in warm water as I formerly used to do. In order to be sure that a given specimen of catgut will answer the purpose in so far as the knot is concerned, that it shall not slip, it is needful that we should steep the catgut in blood-serum, a somewhat troublesome process, as it involves sending to the slaughter-house for blood. The method which I published long ago answers the purpose very well for ligature of arteries in continuity, provided certain conditions in its preparation be complied with; such, at least, is my own experience. This indeed has not been very extensive, but it has been sufficient to deserve consideration. I have tied altogether nine considerable arteries in continuity with prepared catgut. Of these one was a case of ligature of the carotid in a young woman, aged twenty-two, with a pulsating tumour below the angle of the jaw, in the situation of the carotid aneurism, and with all the symptoms of that disease. The application of the ligature reduced to a certain degree the pulsation and the dimensions, but the further cure which we hoped for did not take place. She left the hospital with a pulsating tumour, and I heard only yesterday from the medical man under whose care she is in Scotland, that this tumour, for which I had tied the carotid artery in 1874 still exists as a pulsating tumour, if anything rather on the increase. But though, as regards the cure of the disease, the ligature was unsatisfactory, nothing could be more beautiful in its effect as respects the healing of the wound without suppuration.

A case of traumatic arterio-venous aneurism of the temporal artery may be mentioned in the category, partly because the greatly dilated condition which the naturally small artery had assumed brought it up towards the dimensions of a large trunk, and partly because the concurrent ligature of the largely dilated veins would, without antiseptic means, have been justly regarded as of considerable danger. The others were all cases of ligature of the femoral. Six were popliteal aneurisms, four of which presented nothing deserving of special remark. One was a diffuse aneurism, extending up to the junction of the lower and middle third of the thigh. One was an enormous diffuse aneurism reaching up nearly to Poupart's ligament. It was necessary for me to tie the femoral artery about the situation of the ordinary origin of the profunda, and even there my incision opened into the aneurismal clots. The last was a case of a large arterio-venous aneurism of the upper part of the femoral of idiopathic origin. This case was of such special interest that I hope on a future occasion to make it a subject of a paper before this Society. In all these cases except two the catgut ligature prepared by the old method was employed, and in all these nine cases the result was satisfactory, and recovery perfect, except as regards the poor young woman who has still the pulsating tumour. Why, it may naturally be asked, has my own experience been more satisfactory with the catgut ligature than that of many other surgeons? There are, I believe, two reasons for this. One is, that I have never ventured to tie an artery of considerable size in its continuity without having taken pains to ascertain that the catgut was of thoroughly reliable material; and the other reason is, that I have adopted strict antiseptic means of treatment not only during the earlier stages of the case, but to the last. So long as any sore exists unhealed, antiseptic treatment of the strictest kind ought, I believe, to be employed.

Even though the sore may seem to be superficial, there may still exist a sinus leading down to the site of the ligature, and if ordinary treatment as distinguished from antiseptic be employed down this sinus, the septic process may advance and invade the ligature, and lead at last to disaster from hemorrhage. I know that this has actually taken place.

But although the catgut prepared upon the old method answers very well if it be of proper quality, there is this great objection to it—that this method requires a long time in order to produce this quality. At least two months are needed to make the ligature at all trustworthy. It is better at the end of six months, and still better at the end of a year. I possess catgut prepared in this way twelve years old; I have brought here a sample of such catgut, which has been steeping in warm blood-serum since this morning, and it will be seen that it remains translucent, and is comparatively firm, instead of being opaque and soft like the unprepared catgut in the same serum.

Now, this length of time that the present method requires is a very serious objection. It makes the surgeon who has not prepared the catgut for himself, and kept it for a long time, at the mercy of the person who supplies it; and the person who supplies it, not being aware of the enormous importance of the time for which the catgut has been prepared, if he happens to have run out of that which has been long prepared, will sell what has been prepared for a short time, and is in consequence altogether unreliable. A case illustrating this point occurred last year in my practice at King's College Hospital. A patient was admitted who had met with a severe wound on the ulnar side of the forearm, the anterior aspect. The ulnar artery had been divided. This had been secured by my house-surgeon. He had also tied with catgut the corresponding ends of the various tendons that had been divided. But when I saw the patient the next day I found that he could not feel with his little finger and the adjacent side of the ring finger, and therefore it was evident that his ulnar nerve had been divided, and my house-surgeon had not thought of attending to the ulnar nerve. I therefore said, "We must open up the wound, search for the ends of the ulnar nerve, and tie them with catgut." I thereupon cut the stitches in the skin, and proceeded to explore the deeper parts of the wound, and I found that every one of the ligatures, which were numerous, by which my house-surgeon had tied the various ends of the tendons together, were lying absolutely loose; the knots had slipped within the twenty-four hours; and yet this catgut had been supplied by our ordinary instrument-maker as reliable catgut. He had supplied what had not been sufficiently long prepared. This, then, is a sufficiently serious objection to the present method of preparation; and one great object which I have had in view in a series of experiments on this subject, with a view of improving the preparation of the catgut ligature, has been to devise a means, if possible, of preparation within a short time. These experiments—it may seem almost ludicrous to say so—have occupied two years of my leisure time in the past, some time ago, and, after having been interrupted, have been continued in a merely desultory manner since; but at length I feel myself justified in bringing before you a new mode of preparation, by which the catgut can be prepared in a short time, and at the same time in a perfectly reliable condition.

But before I allude to these experiments, which I must endeavour to do in a short compass,—I should weary you if I were to bring a large proportion of my facts before you, though I may say, out of the hundreds of experiments I have performed on the subject, I have never performed one which has not added something to my knowledge on the subject,—before referring to these experiments, I wish to say a few words as to what catgut is. Catgut, as you are doubtless all aware, is prepared from the small intestine of the sheep. The small

intestine of the sheep is treated in what seems an exceedingly rude manner for so delicate a structure. It is scraped with some blunt instrument, such as the back of a knife, over a board, and by this means, as the people express it, the dirt is scraped out. That which these people call the dirt is the exquisite and complicated structure of the intestinal mucous membrane. The intestinal mucous membrane is scraped out by means of the back of the knife. But while the mucous membrane is scraped out from within, there is also scraped off from without, or from more external parts, the circular coat of the muscular fibres. The circular muscular fibres are disposed of, and the result comes to be that the intestine is converted into a comparatively slender material of two parts, the one consisting of the peritoneum and some longitudinal muscular fibres; when the mesentery is stripped off by the butcher, the peritoneal coat contracts into a narrow band, and this, with some longitudinal fibres, constitutes one of the two parts to which the intestine is reduced by this process of scraping. The other part is the essential part from which the catgut is prepared, and this is neither more nor less than the submucous cellular coat of the intestine. When I first visited a catgut manufactory I was astonished to find that after this scraping process the intestine could be blown up still as a continuous tube, as you will see here. This structure is a beautiful anatomical preparation, made, though in this rude fashion, by these preparers of the catgut. The submucous cellular tissue or submucous cellular coat of the intestine which is in the sheep has this extraordinary toughness, and is the material out of which catgut is prepared. For what the manufacturer terms the "ones"—the thicker form of ordinary catgut—all that is done is to twist the gut by means of a wheel, like a rope in a ropewalk, up to a considerable degree of tightness, and then allow it to dry. It is then exposed to the fumes of burning sulphur, and for some more special purposes it is somewhat bleached by the application of potash. But the essential thing is the twisting and drying. It can be prepared without the use of sulphur as well as without the use of potash. Some specimens which I have here are prepared by water only, without the use of any other ingredient. This exceedingly beautiful structure, as I think we must consider it, as fine as a horse-hair, is prepared without any ingredient whatever, nothing but an animal tissue twisted and dried. For the finer kinds the tube of the submucous coat is split up by means of razor-blades, more or less numerous according to the degree of splitting required, connected with a conical piece of wood which is pushed along the tube.

Such is the catgut. It is composed of the submucous cellular tissue. The first of the more recent experiments which I performed was one with a view of ascertaining, if possible, what part the water had in the material used for the preparation by our old method. If I steep unprepared catgut in a mixture of carbolic acid and oil, however long it be so steeped—it will be of course abundantly antiseptic—it is utterly unfit for the purpose of the surgeon, a knot upon it would still slip. But if, instead of using carbolic acid in the crystalline state, we use carbolic acid which has been liquefied by the addition of a little water, we get in course of time a properly prepared catgut. I wished to ascertain how much water was required. The carbolic acid would enable oil to dissolve a certain amount of water; would that amount of water be sufficient which carbolic acid enables oil to dissolve? Accordingly I prepared some jars, some containing the full amount of water we had used hitherto, some the smaller quantity, and some none at all. In due time I proceeded to examine the result by taking portions of gut and putting them into warm water and leaving them for a certain time in order to ascertain how the knots would hold. To my great surprise I found that which had been steeping in the carbolic acid and oil without any water was just as good as that which was in the carbolic acid and oil with the water. It was contrary to

distinct previous experience. Reflecting on the matter made me see that the only possible explanation could be that the catgut was, so to speak, prepared before I put it into the liquid. Now, it so happened that the catgut I had used was several years old: it turned out that the mere age of the catgut prepares it—that in proportion to its age it is rendered less liable to be softened by water or by blood-serum, and a knot tied upon it will hold better. And thus I had for the first time, I believe, scientific evidence of the truth of what is popularly spoken of as the “seasoning” of various articles made of animal products. I asked a person who sold violin-strings if there was any result from keeping the strings a long time. He said, “No,” the only result he knew was that they would probably get rotten. But it so happened just about that time there came an old fiddler to amuse the patients at the Royal Infirmary of Edinburgh at Christmas-time. They happened to have wet weather, and he said that his fiddle would not work properly because the fiddle-strings were not properly seasoned. So that he was aware that fiddle-strings, which of course are catgut, are liable to seasoning, and require it. This is a very important fact—at least, it was extremely important to me, because it served to explain the success that I had had in my earlier experience with the catgut, before I knew at all the proper modes of preparing it. I look back almost with horror at some of my early procedures with catgut. I have operated, for example, on an irreducible ventral hernia, opened the sac, divided the adhesions, returned the protruding intestines, stitched up the mouth of the sac with the catgut, and then applied stitches at considerable intervals in the skin. All went perfectly well, but the mode of preparation that I then used, if I had worked with catgut recently made, must have ended in utter disaster; the knots must have slipped in a few hours, and the intestines must have been protruded through the wound. I need hardly say that this mode of preparation, interesting though it is, would not be satisfactory; it would only have, in a more aggravated form, the inconvenience of the extremely long period required which our old method has; and, besides that, it by no means provides all the conditions that are required for a perfectly satisfactory state of the catgut for surgical purposes. These conditions I may mention. In the first place, I have spoken of a short period of preparation. This is very desirable. Then it is essential that the catgut should have the proper strength, so as to bear any reasonable strain that the human hands can put upon it in the thicker forms, as when used, for instance, in such cases as the ligature of the thyroid vessels, in the removal of a thyroid tumour, or in ovariectomy. But it is not sufficient that it should be strong to start with—it is easy to get catgut strong in the dry state—it is necessary that it should be strong after steeping in blood-serum for a while. Suppose, for example, in the case of tumour of the thyroid I had passed the various ligatures. I passed in that case six, and in a former case, where the tumour was larger, I thought it prudent to pass as many as eight so as to subdivide the mass that had to be tied; but it is not convenient to tie each of these ligatures as soon as it is passed. The process of passing takes a considerable time, and it would be a very sad thing if the residence of the catgut among the tissues soaked with serum for a few minutes, or even a quarter of an hour, should render the catgut so soft that it should give way when we put the strain of the hands upon it. That, then, is another point that is essential if it is to be useful for the purpose for which it is devised. Then, again, it is necessary that a knot tied upon it should hold it with absolute security—not merely in the first instance, but after soaking for an unlimited time in blood-serum. It is further necessary that it should not be too rigid; that it should not be over-prepared, for, as we shall see immediately, it may be over-prepared, so that it may remain almost like a piece of wire among the tissues, in which case it may come away in consequence of the

irritation which it produces as a mechanical object, as a hard mechanical substance. It is necessary that it should be somewhat soft, so as to be mechanically unirritating; and yet while it must be soft it must not be too rapidly disposed of by absorption. If it is to do duty for the ligature of an artery in its continuity in the immediate vicinity of some large branch, it must remain for a considerable time of good firmness, unabsorbed, and when it is at length absorbed it is desirable that it should be absorbed in such a manner that while it is reduced in thickness it should still, as long as any of it remains, retain its firmness.

Now, these are a series of conditions which, I assure you, it is not easy to comply with. I have in various experiments complied with some of them easily enough, but failed in others. Sometimes I have complied with all but one, and failed in one. I have used various materials in experiments, as you will naturally suppose. One material that suggested itself was tannic acid, so as to convert the catgut into leather. I succeeded well enough in some respects with tannic acid in different ways modified, but in this respect I did not succeed. I have not obtained by means of tannic acid a kind of catgut that is not too speedily absorbed. I tried at last a piece of kid leather cut into a suitable shape, and I found that this, after being rendered antiseptic, and applied as a stitch, became too rapidly absorbed. Chromic acid was another substance which I very naturally used, knowing as I did how it was employed for hardening tissues. Chromic acid in itself does not work very well, but I found that the addition of some other substance to it aided its action very greatly. By the addition, for instance, of a little glycerine, thus producing a reducing action on the chromic acid, we get a different sort of material which acts much more energetically on the catgut. I was highly delighted with the results of the action of a mixture of chromic acid and glycerine. Just about this time it so happened that Mr. Alfred Pemberton, of Birmingham, applied to me for a piece of catgut for the purpose of ligaturing an external iliac artery in a remarkable case of three aneurisms in one limb—two in the femoral, and one in the popliteal. I thought I could not do better than send him my recently prepared chromic catgut. I did so. He wrote to me soon afterwards, saying that nothing could be more satisfactory than the result. He had operated antiseptically; the wound had united by first intention, and a month afterwards, so far as the case could go well, all had gone well. There was, indeed, gangrene of the lower part of the leg, which Mr. Pemberton predicted, in consequence of the existence of the obstructions of the ligatures of three aneurisms in the course of the arterial channel; but the case, by proper management, was doing well, and ultimately the patient recovered, though with an amputated limb. But four weeks later Mr. Pemberton wrote to me again, telling me that soon after his last report the patient had begun to show signs of suppuration about the seat of the wound. After awhile the abscess opened in the cicatrix, and the ligature which he had put on was discharged. It is now on one of the cards before you—an over-prepared ligature which had come away, rigid and wire-like, making its way out as a piece of glass might have done, by mechanical irritation. This opened my eyes for the first time to the possibility of having catgut ligatures over-prepared. It is by means of chromic acid, however, that I have arrived at the ultimate result which I have to bring before you. I may mention that the over-preparation by means of chromic acid is, I believe, to be found illustrated in a large German school at the present time. I have been told by an American physician who has lately been in London that at that school catgut ligatures invariably come away from all wounds. They count the ligatures as they put them on, and invariably see them all before the case is done with. The ligatures have been over-prepared.

Before speaking of the present method, I wish to say a few words with regard

to the old method. To what is it that it owes its virtue? Here we have some catgut which has been in our old preparing liquid, viz., one part of carbolic acid which has been liquefied by means of water, to five parts of olive oil. Here we have some catgut which has been the same length of time, since April last, in a solution of carbolic acid and water. Water will only take up one-twentieth part of its weight of carbolic acid, but the effect produced upon the catgut is very much greater. In the one case, as you can see, the catgut is almost black, a sort of purple black, while the other is completely pale, very little altered from its original colour. This circumstance shows two things. In the first place the effect of the watery solution of carbolic acid upon catgut explains the efficacy of the water in our old method. It is the watery solution of carbolic acid in the liquid of the old method that is the effective agent. But, while that is the case when this watery solution is mixed with oil, the fact that it is so mixed limits and checks its operation, whereas if we have it in the watery solution only, there seems to be no limit to the degree of continuous preparation of the gut, so that it becomes more and more dark in colour, and more and more difficult to absorb by the tissues. It is otherwise when the watery solution is blended with the oil. Though the process does go on for many months, there arrives a time when it comes to a standstill. You need not fear that the catgut prepared by the old plan is over-prepared at the end of two years. I have a specimen here which at the end of twelve years is as limp after steeping in blood-serum as it would have been at the end of a single year. Therefore we possess in the carbolic oil a means of checking any mode of preparation that we may adopt, keeping it from that time forward not materially further prepared; while at the same time this large proportion of carbolic acid to oil insures the catgut being perfectly aseptic.

The method which I have found, after various trials, to be that which may be recommended is the following: I take one part of chromic acid, 4000 parts of distilled water, and 200 parts of pure carbolic acid or absolute phenol. In other words, I use a one-to-twenty carbolic acid solution, only that the carbolic acid is dissolved not in water, but in an exceedingly dilute solution of chromic acid. This small quantity of chromic acid has a very great effect upon the gut. Into a solution of that composition I introduce catgut in weight about equal to the weight of the carbolic acid. If you have too large a proportion of catgut, it will not be sufficiently prepared; if you have too small a quantity it may run the risk of being over-prepared. This liquid seems really to answer the purpose, and to comply with all our conditions. At the end of forty-eight hours catgut steeped in such a solution is sufficiently prepared. It is then taken out of the solution and dried, and, after drying, placed in one-to-five carbolic oil; it is then fit for use. I have here a sample of the prepared catgut by the new method. Although it has been steeped in warm blood-serum since this morning at eleven o'clock, it is still firm and translucent, and a knot upon it holds with the most perfect security.

The strength of the catgut depends upon different circumstances. In the first place, sheep differ as to the strength of their intestines, and the catgut-maker, if he be a good one, will insist upon having sheep of the proper kind. In the next place, the intestine must not be allowed to putrefy—it must be taken fresh. For these things you must of course rely upon the maker of the catgut. In the next place, whatever method you adopt, the liquid will probably cause a certain amount of swelling of the catgut, and this will tend to produce a little uncoiling of the twisted gut. It is of very great importance that this should not occur, because, if you have uncoiling, you may have uncoiling of different degrees in different parts, and this may lead to weakness at some part which you cannot foresee, and the gut may give way when you subject it to a strain. The catgut, then, should be prepared on the stretch, both when it is put to soak and when it is put to dry.

I need not enter into the mode in which this can be done by the manufacturer. I may only say this, that the private surgeon who wishes to prepare it himself may do it in different ways. For instance, he may take two large test-tubes, one a little larger than the other, and he may wind the catgut on the smaller tube, fixing one end by sealing-wax, winding round, and then bringing it up again, and fixing the other end with sealing-wax at a higher level than the liquid will come to, putting sufficient liquid into the larger test-tube, and putting in the smaller test-tube with the catgut wound round it, with a little shot to keep it down in the liquid. After forty-eight hours he takes out the smaller test-tube, and leaves it till the catgut is completely dry. I merely mention this as an illustration, and also as furnishing a hint to some surgeons in private practice who may desire to prepare the catgut themselves. Or a couple of gallipots, one larger than the other, will do just as well.

So much for strength in the dry state. As to strength in the condition after steeping in blood-serum, I confess it is only this very day that I have obtained evidence that catgut prepared by this method is really all that we can desire in that respect. The catgut of the hank from which this specimen was taken in the dry state measured $2\frac{3}{4}$ hundredths of an inch in diameter, and broke at 13 lbs. A piece $2\frac{3}{4}$ hundredths in diameter broke at a strain of 13 lbs. 6 oz. I found by experiment that 10 lbs. is the utmost strain that my arms are able to put upon a cord. 13 lbs. 6 oz., then, is amply sufficient, while at the same time the catgut is not at all too large for going into the eye of an aneurism-needle. Having obtained, the other day, some fresh blood of a cow from the slaughter-house, I took some of the serum to-day, and put two pieces of this same hank of catgut, prepared after this new method, in the serum, and I put this in my warm box in a stoppered bottle. The temperature of the box was 98° Fahr. After more than half an hour I tested the breaking strain (I must not stop to explain how that is done), and I found that the breaking strain of the same catgut, which in the dry state has broken at 13 lbs. 6 oz., was 11 lbs. 4 oz.—that is, though supplied by the serum, it had only lost in strength 2 lbs. out of 13 lbs. I think that is really all that can be desired.

As to the behaviour of the catgut among the tissues, I wish to say a few words on this point before I conclude. It has been said of late by various persons that the catgut is dissolved by the serum. I must confess that this is entirely contrary to my own experience. I have already said that in order to test the quality of catgut you must have it steeped in blood-serum. I have tested catgut prepared in various ways in this manner. The serum has sometimes been putrid, sometimes it had no smell at all, and sometimes it had a little odour. This serum has been kept about the temperature of the body, but I have never seen the slightest indication of any chemical solution of the catgut. Then, again, as to the behaviour of the catgut in the body, suppose we use it as a stitch, if the catgut were disposed of as a matter of chemical solution we should expect that when it is employed as a stitch and a piece of our protective is put over it, which is always kept moist with serum perpetually oozing from the wound, the outer parts of the stitch, the parts outside the skin, as well as the parts among the tissues, would show signs of diminution. It is never so. The diminution is always absolutely limited to the parts within the tissues. Then it is still more striking, perhaps, as was suggested to me by Mr. Cheyne, to consider the case of the catgut drain. There its very function is to drain out the serum, and it is perpetually washed with it. You might suppose that the stitch would get a little dry. Here there can be no mistake; the serum from the wound is perpetually flowing; yet, as in the other case, we find the diminution of the catgut is absolutely limited to the part within the tissues. This seems to me sufficient evidence that it is not a ques-

tion of the mere chemical solution of the catgut, but a question of the disposal of the catgut in some way or other by the living textures. Then, again, if we examine catgut in the process of diminution we find that it may be effected in one of two ways. If the catgut has not been properly prepared, the substance of the catgut becomes converted in the course of a very few days into a soft, pulpaceous mass, which, when we examine it by a microscope, we see consists of remains of the old cellular tissue of the submucous coat, and the interstices among these fibres filled with cells of new formation. The catgut tissue is infiltrated with cells of new formation, and it is obvious it is this infiltration which is the cause of the softening. But, on the other hand, if we find that the catgut is properly prepared, instead of being infiltrated by the cells of new formation it is only superficially eroded. I have on one of these cards a pretty example of catgut that has been served in that way by the tissues. You will see that there remains a very slender residue of the catgut, all the rest having gone; but that slender residue has continued firm and translucent, still retaining its firmness, showing not even a superficial infiltration—in short, having exactly the characters that we desire for catgut required for the ligature of an artery in its continuity, that till the last, even though reduced in dimensions, it shall retain its firmness and its tenacity. We know that antiseptic treatment has shown that a piece of dead bone may be absorbed provided it be not putrid: the granulations that overlap it superficially may, so to speak, erode it. It is not necessary for us to consider how that may be done, but certainly in some way or other the granulations do what mere steeping in that serum, whether putrid or non-putrid, never would do. Never would the bone be dissolved by the serum. Just as a non-putrid sequestrum is served by the tissues, so is a well-prepared specimen of catgut; it is superficially eroded. I have here a stitch that I removed to-day from a wound made for stretching the anterior crural nerve, which was stretched, as well as the sciatic, in an aggravated case of sciatica; and you may see that as yet it shows no signs of erosion. We know by experience that if it were left three or four more days we should find it largely eroded, as these specimens show; but until nearly a fortnight has elapsed erosion does not begin. It proceeds gradually, and the thicker the catgut the slower does it proceed. We may fairly consider that a fortnight or three weeks is long enough for the persistence of a ligature upon an artery in its continuity.

I have brought with me the carotid artery of the calf in which I first established the fact of the substitution of new living tissue for the dead old tissue of the catgut. If any gentleman will examine the specimen he will see the ligatures of new formation incorporated with the external cellular coat of the artery. I am sorry that I am not able so to express myself in the English language as to make my meaning understood. I have been strangely misrepresented as having conveyed the idea that the catgut, when it becomes organized, comes to life again. Gentlemen, such an absurd notion certainly never entered into my head, any more than when I have spoken of the organization of a blood-clot, I have meant by that expression to convey the idea that the blood-clot becomes organized by its own inherent virtue. I found the term organization ready to my hand; it was no term of my own invention. It was used with reference to lymph. Now, pathologists, in speaking of lymph as becoming organized, did not, I suspect, mean by that expression to imply that it was the lymph substance that had the power of self-organization as distinguished from any influence that surrounding tissues might exert upon it. So, in the same way, when we speak of the vascularization of lymph, that was the term used when it was universally believed by pathologists that the bloodvessels were formed only by loops from pre-existing bloodvessels. Nowadays a different view may be taken, but the term "vascularization of lymph" was used without any idea that the lymph itself created

the bloodvessels. And so, when I spoke of the organization of the blood-clot or of catgut, I certainly never meant to convey the idea that either the one or the other did the work itself. With regard to the catgut, I think if gentlemen would refer to my original paper in the *Lancet* they would see that I stated very explicitly that new tissue forms at the expense of the old, that the old tissue is absorbed by the new, and that as the old is absorbed, new is put down in its place.—*Med. Times and Gaz.*, Feb. 5, 1881.

Medicine.

Diphtheritic Albuminuria.

The albuminuria which occurs so constantly in diphtheria was long believed to be a direct effect of the altered blood-state, without any renal lesion. Lancereaux and Brault, however, have described certain organic changes in the kidney. They found the epithelial cells swollen, badly defined, infiltrated with granules of protein, and the lumen of the tubules obliterated in many points by colloid or granular masses. These lesions are analogous to those described by M. Cornil in acute poisoning by cantharadin.

The nature and mode of production of this diphtheritic nephritis is the subject of a recent communication by M. E. GAUCHER to the Société de Biologie. It may be *à priori* expected that the lesion would be due to the same mechanism as that which produces the similar changes which have been found in some other infectious diseases. In the nephritis which sometimes occurs in typhoid fever, for instance, there is a similar granular infiltration of the epithelial cells and a similar obstruction of the lumen of the tubules by diffused material or globular masses. These alterations have lately been ascribed by Bouchard to the infiltration of the kidney by bacteria. In a case of malignant diphtheria in which the urine contained a considerable amount of albumen, M. Gaucher, adopting all precautions to prevent the access of external germs, was able to demonstrate without difficulty the presence of bacteria in both the blood and the kidneys. The urine was collected in a glass, washed with alcohol and heated, and, examined immediately, was found to contain a large quantity of spherical or punctiform mobile bacteria (monads or micrococci). There were no rods or chains. In the blood the same organisms were found, less numerous, but perfectly distinct. The patient died seven days after the onset of the disease. The kidneys, examined in the fresh state, were found crammed with bacteria similar to those which had been found in the urine and the blood during life. The epithelial cells of the urinary tubules were filled with highly refracting granules, strikingly similar to the micrococci found in the urine. In sections which had been hardened in osmic acid the same granules were found. From these facts Gaucher concludes that diphtheritic nephritis is of parasitic origin, and that the albuminuria is the result of the passage of the bacteria of the blood through the kidneys. The albuminuria is thus to be regarded as an effort at the elimination of the poison.—*Lancet*, March 5, 1881.

Syphilis and Tabes Dorsalis.

WESTPHAL (*Archiv f. Psych.* xi. p. 230) concludes that an etiological relation between syphilis and tabes is unsupported either by clinical or pathologico-anatomical facts. In 75 cases, whose histories were comparatively well ascertained, he found chancres in 14, chancres and secondary symptoms in 11. Nine-

teen out of 20 cases occurring in women had no history of chancre, and the twentieth case was a doubtful one. In one case only were secondary symptoms present whilst the patient was under observation. Of 16 cases that came to autopsy one only showed evidences of syphilis, and in another the appearances were doubtful. Further, Westphal has never seen a case of gray degeneration of the posterior columns cured by anti-syphilitic remedies. Remak (see *Centralblatt f. d. med. Wissensch.* 1880, No. 43) obtained a history of syphilis in 25 per cent. of his cases of tabes, nevertheless he does not admit a direct causal connection between the two. Bernhardt admits that syphilis may produce tabes, but it is not nearly so potent a cause as is often supposed.

Westphal reports a case in which, besides other lesions of a syphilitic nature, there was disease of the posterior columns in the upper cervical region. The medulla of the nerves had disappeared, but the axis-cylinders were intact, and in some places seemed larger than normal. The vessels were dilated and their walls thickened. There was no increase of connective tissue or proliferation of nuclei, no corpora amylacea, no cells with fatty granules. The changes were evidently due to a peculiar parenchymatous affection. A gumma was found in the posterior part of the corpus callosum. Westphal compares this case with one recorded by Schultze, in which there was a tumour of the anterior part of the corpus callosum and degeneration of Burdach's columns down to the lower dorsal region. In Burdach's columns the nerves had lost their axis-cylinders, but for the most part retained their medulla. The neuroglia was normal.—*Brain*, Jan. 1881.

On the Early Stage of Locomotor Ataxy.

An early recognition of ataxic tabes is of the highest importance, as it is only at the earliest stage of the disease that we can hope to do much good by our remedial measures. The ocular symptoms are frequently the earliest; and among them the author draws attention to a sudden and transitory paralysis of accommodation of one eye. This may be the only trouble present, but is often accompanied with mydriasis paralytica. These symptoms may precede the actual invasion of the disease by some years. Then dissociated paralyses of the third, of the fourth, and sixth nerves may intervene, as well as spinal myosis, which is characterized by absence of reaction to light, but not to the accommodative impulse. Or, again, mere sluggishness or absence of reaction to light may be present. Charcot has well described the progressive optic atrophy; the papilla presents the appearance of a flat depression according to MÜLLER, and the vessels gradually become smaller. The field of vision diminishes concentrically in the two eyes unequally, the region of dimness has the shape of sectors having (not the fovea, but) the papilla as centres; and this diminution is much more readily appreciated on indirect vision. Achromatopsia may occur, first to green, then to red. In disseminated sclerosis the sense of colour is preserved. The author recommends Doucet's perimeter as the most convenient to test these defects in practice.

The lancinating pains present various peculiarities which need not be dwelt upon here; the various other defects or alterations of sensibility are also well known. Berger has shown that there may be deficient algæsia to powerful stimuli, whilst weaker ones are responded to. Retardation of transmission of sensations is not very common. The sense of pressure is often deficient at an early period.

The well-known "tendon reflex" may coexist with ataxia (in 2 cases among 82: Berger). Certain facts lead the author to suspect a period of heightened reflex preceding its abolition.

[I have now under observation a somewhat doubtful case, in which there are shooting-pains in the left leg with very diminished tendon reflex, and markedly increased reflex in the right. The right hand is the seat of progressive muscular atrophy.]

Erlenmeyer has prominently brought forward the early gastric symptoms of tabes; they either take the form of nervous dyspepsia or actual catarrh. These symptoms have the characteristic suddenness of many tabetic symptoms.

The genito-urinary organs present numerous forms of disturbance. We may note here urethral and rectal neuralgias, causing spasmodic contraction of the bladder, and tenesmus.

The well-known crises gastriques may constitute for a long time the chief feature of the disease, and may require care in their diagnosis from other stomach ailments. The pneumogastric may be affected differently, and give rise to tremendous fits of coughing. The "crises néphritiques" need only be mentioned here.

Arthropathies and osseous fragility may appear early. The pulse is usually frequent. The sweat, increased at first, becomes deficient later on, and is not readily induced by pilocarpine in the diseased regions. The ataxic symptoms are usually pathognomonic of the second period. The author has noticed two cases of early peroneal paralysis.

The treatment of tabes at this initial stage consists, first, in a strict hygienic mode of life; second, in the administration of ergot and nitrate of silver, a mild course of hydrotherapy (the water to range between 20°-25° centigrade) and electricity. The latter is to be applied centrally by means of large electrodes (2 × 6 inches), using a current strength of 8-11 milliwebers; and may be also usefully applied symptomatically for relieving the ocular troubles, the gastric pains, etc. Against the latter and the shooting-pains Chapman's bags may also be used with success.

The author next discusses the anti-syphilitic plan of treatment, and condemns it—first, because it is useless; second, because he does not consider the syphilitic nature of the disease as demonstrated. Several instructive cases bring Dr. Müller's valuable paper to a close.—*Brain*, Jan. 1881, from *Mittheilungen des Vereines der Aertzte in Steiermark*, 1879.

—
A Case of Chronic Vomiting in which no Food was taken, except Koumiss, for Sixteen Months.

At a late meeting of the Clinical Society of London (*Med. Times and Gazette*, Feb. 26, 1881), Dr. H. SUTHERLAND related this case. The patient, a girl, aged twenty-four on admission, had been for five years under his care at St. George's, Hanover-Square, Dispensary. One year and seven months ago the vomiting commenced, the attack coming on at first only once a fortnight, but lately it had occurred always once, and sometimes five or six times a day. As far as could be ascertained, there was no organic disease of the stomach, no tenderness on pressure, or cachexia, nor any other constitutional symptom. Every known remedy was tried to allay the vomiting—bismuth, opium, hydrocyanic acid, creasote, carbolic acid, hyposulphites, etc.—without any satisfactory result. All attempts to cure the case by dieting had failed, and the patient could keep nothing on the stomach as food except koumiss, which she had taken for sixteen months. She is, however, able to retain a quinine-and-orange mixture, and also sherry in small quantities, for brandy makes her sick immediately. The uterus was not displaced. The object in bringing the case before the Society

was to ask if members could suggest any remedies or mode of treatment in this distressing case.

Dr. JAGIELSKI had found that koumiss could often be retained and do good when nothing else would. The case just recorded was probably unique, inasmuch as koumiss was required for eighteen months, and that the patient had decidedly improved under its use. Often, koumiss could be borne when milk could not. This might be because the casein had been broken up by the carbonic acid in the process of production.

Dr. BROADBENT inquired whether the patient had been engaged in any kind of work or been entirely idle during the period referred to. The case was in all probability one of hysteria, as indicated by the nervous condition, the irregular menstruation, and the regular morning and evening vomiting. It belonged to the fasting-girl class.

Dr. B. O'CONNOR mentioned a case where he had used various forms of milk and Valentine's beef extract with success. He found that, in some cases, the upper portion of the milk after standing suited best.

Dr. WILBERFORCE SMITH said that in such cases the stomach could not digest nitrogenous substances, and that therefore he would recommend cream and fat boiled with water-biscuits as an alternative diet.

Dr. DOWSE asked how much koumiss was given in the twenty-four hours. The case was evidently a nervous one, and he would suggest that solid instead of liquid food be tried.

Dr. SUTHERLAND said the patient lived at home and did no work. The case was not, he thought, hysterical, but the patient was bad-tempered and inclined to suicide.

Post-mortem Emphysema from Gastric Ulcer.

Among the causes of subcutaneous emphysema ulcer of the stomach is one of the rarest. An instance has, however, lately been reported by POENSGEN in the *Deutsches Archiv für Klin. Med.* The patient was a man aged thirty-seven years, who had for three years presented the symptoms of gastric ulcer. He had been treated by washing out the stomach by a douche, and was relieved. A fresh attack of vomiting occurred, and he died suddenly on his way to the hospital. A short time after his death, the abdomen, chest, neck, head, face, arms, and the left leg were gradually invaded by enormous subcutaneous emphysema, which was also found after death in the connective tissue of the mediastinum and beneath the peritoneum. In the smaller curvature the wall of the stomach was perforated by an ulcer, and on the inner surface of the abdominal wall was another ulcer, which had apparently corresponded to the perforation in the stomach, and through it the gas from within that organ had seemingly escaped into the cellular tissue.—*Lancet*, Jan. 22, 1881.

Nature of the Green Vomit.

The chemical and microscopical nature of green vomit has been made the subject of recent investigations by Dr. F. BETZ (*Mémorabilien*, Oct. 6, 1880). It was supposed that the green vomit (*vomitus æruginosus*) was the result of a greenish discoloration of brown biliary pigment, caused by the acid action of the gastric juice. The supposition received corroboration from the bitter taste of the vomited matter, associated with its acid reaction. Dr. Betz concludes, however, that the green colour is not invariably due to the presence of bile. The colour often varies from a yellowish-green or grayish-green, to a grass-green or dark-green, in accordance with the greater or less amount of the green "substance"

and other admixtures. If green vomit be allowed to stand in a vessel, the greater part of the greenish substance will sink, whereas a small portion, containing slime and fatty matters, will float on top. Shaking with water shows that the green substance is heavier than water and insoluble in it, a proof that bile is not the cause of the colour. Agitation with chloroform or ether likewise demonstrates this, for neither fluid takes up the green substance. It may, however, be isolated by shaking with ether in a test-tube. This manipulation results in the appearance of three strata, an upper one consisting of ether, a middle one composed of the green substance, and a lower one containing the gastric mucus. Strong sulphuric acid produces a red colour, strong nitric acid leads to a yellowish discoloration of the green substance. Acetic acid develops and fixes the green colour very completely. Tincture of iodine produces a yellowish-brown, and not a blue tint. Alcohol dissolves the green substance. In some respects, it resembles the chlorophyll of plants. The alcohol dissolves it, and even retains the green colour when boiled. The green vomit may be kept for months and during the hot season, without spontaneous putrid fermentation taking place—a fact which militates against the possibility of its biliary or even animal nature. Dr. Betz also states that sometimes the green vomit has a neutral or alkaline reaction. Microscopical examination shows the green substance to consist of an amorphous, finely granular greenish mass. Discoid heaps, or rounded colonies, are commonly observed. But the green substance may also form a lining over epithelial cells, salivary corpuscles, etc. From these facts Dr. Betz infers the vegetable nature of this substance, and he adds that it is probably derived from punctiform algæ, which he calls *chlorococcus*. He denies any relation of this low fungus to other microphytes, such as the *torula cerevisiæ*, *sarcina ventriculi*, or *oidium*. Finally, the author remarks that, apart from all other considerations, the frequent occurrence of copious green vomits would go to show that bile could not find its way into the stomach in such erroneous quantity. The bitter taste of the green vomit receives its explanation in part from the frequent admixture of some bile, but is also in part due to the presence of a bitter principle in the *chlorococcus*.—*London Med. Record*, Feb. 15, 1881.

Treatment of Infantile Diarrhœa by Charcoal in the Milk.

For children belonging to families in easy circumstances, M. J. GUÉRIN mixes a certain quantity of Belloc's powder of charcoal with each milk meal—half a teaspoonful only at each meal. For the children of the working classes, Belloc's powder, which is a little dear, is replaced by very finely powdered, farina-like, ground bakers' charcoal. This powder mixes readily with milk, and children drink the mixture as though the milk were pure. In a very short time, sometimes on the first day, the stools change in consistence and odour, and instead of being green, become blackish-yellow. At the same time that this addition is made, M. J. Guérin dilutes the milk with one-third or one-half of sweetened water, and the children take it without repugnance or vomiting. M. Guérin has frequently seen children, exhausted by seven or eight days' uncontrollable diarrhœa, regain in two or three days the expression of health.—*Lond. Med. Record*, Feb. 15, 1881, from *L'Union Méd.*

Causes of Contracted Kidney, and on the Diagnosis of Different Forms of Nephritis.

ZIEGLER (*Deut. Arch. für Klin. Med.*, Band xxv., sec. 586) says the chief factor in the causation of granular kidney is not the degeneration of the parenchyma, but the non-occurrence of its regeneration which can restore it to its

integrity. Simple fatty degeneration, which occurs in various diseases, in anæmia, and may be caused experimentally, has not succeeded in affording any explanation of granular atrophy. He starts with the investigation of senile atrophy of the kidney, in which, obviously in consequence of generally diminished nutrition, there occur enfeeblement of the circulation, wasting of the glomeruli, first at the periphery, then disappearance of the tubules connected with them, and finally more or less extensive small-celled infiltration. The arterio-sclerotic form of granular atrophy stands next to this. Here, the most important changes are wasting of the glomeruli, collapse and atrophy of the tubules, and finally, hyperplasia of connective tissue. Fatty degeneration occurs secondarily, but the cells become smaller, like those of the looped tubes; most contain cylinders. The vessels are widened, and this seems to be the cause of the increase of urine. The embolic form is similar to the latter. By obstruction to the greater circulation, and increase of the heart's action, the same changes take place in the kidney, which apparently originate in wasting of the glomeruli, perhaps in consequence of exudation into the capsules. Great interference with the nutrition of the kidney of different sorts may lead to extensive degeneration of the parenchyma; but regeneration takes place if the glomeruli have not been involved, or if the destruction be not too great or continued. When the latter occurs, atrophy results; as occasionally happens, for instance, in acute jaundice. It may also follow parenchymatous degeneration, as seen in the small patches of atrophy on the surface of the large white kidney; but generally atrophy occurs only rarely. The glandular degeneration, in all those forms which he groups together as interstitial indurative nephritis, is of secondary importance. The atrophy of the tubules is the result of their abolished function, of the destruction of the glomeruli, which latter depends upon fibrous hyperplasia of the capsules, or on a concomitant disease of the arterial system. Besides the form of atrophy from compression, he gives three groups of atrophy of the kidney. The first, of which the type is the arterio-sclerotic form, is dependent on simple interference with the circulation, and must be distinguished from the inflammatory forms. In the second, he classes all the degenerative processes which are followed by destruction of the epithelium (embolism, temporary ligation, chemical irritants), excluding regeneration. In the third group (interstitial nephritis), there is a combination of epithelial degeneration with other processes—cellular infiltration, proliferation of the epithelium of the capsules and glomeruli, wasting of the vascular tufts. Both the latter groups—which differ only quantitatively, not qualitatively, as in both there are epithelial degeneration and hyperplasia of connective tissue—are, nevertheless, to be kept distinct, as there is no "identical pathological principle," as Weigert thinks.—*London Med. Record*, Feb. 15, 1881.

Post-scarlatinal Nephritis.

The greater part of the contribution of Dr. HAJEK (*Archiv für Kinder*, vol. 1. pl. 10) agrees with the majority of articles to be found in German periodicals, in consisting almost entirely of an enumeration of the names of every one who has had anything to say on the subject in question, coupled with a partial criticism of their views, and concluding by leaving the question still in doubt, or only augmented by some trifling additional information. As articles of reference to what has been said, such papers are invaluable. Whether all that has been said is worth being referred to, is perhaps doubtful. With the uncertainty that exists as to the cause of the complex symptoms included under uræmia, this title is rather to be regarded as provisional; and the further question of the exact connection of nephritis with the acute exanthemata, especially scarlet fever, is still

uncertain. Uræmia is a constant accompaniment of diffuse inflammation of the kidneys; and researches on uræmic eclampsia have disclosed affections of the brain and cord, such as œdema, and even hemorrhage into the meninges and nerve-substance, which, according to Traube, by producing a capillary anæmia leads to convulsion, a theory at variance with what is usually held. Frerichs attributes the symptoms of so called uræmia to carbonate of ammonia, derived from urinary salts, whilst Voit regards the retention of all or some of the products of decomposition within the body as the cause, and compares the result to the extinguishing of a fire by accumulation of ashes. Caffer (1878), by injections of carbonate of ammonia into the blood, found that the corpuscles by the retention of this salt are materially changed in their structure and power of absorption of oxygen, and their number considerably diminished. Jaksch and Treitz suggest the decomposition of materials in the intestine as a supplementary source of ammonia. Mantegazza has seen muscular convulsions from injection of urinary matter as well as from the immersion of portions of muscle in urinary sediment. Perles and others speak of the quantity of kreatin and kreatinin in the blood in Bright's disease. In short, the connection between retention of urine in nephritis, and the appearances of uræmia or ammonæmia is yet so imperfectly defined, that Thomas, in *Gabault's Handbook of Children's Diseases*, says that uræmia arises upon some disturbance of the urinary secretion, and is probably occasioned by it. To the question, what is the pathological connection between nephritis and scarlet fever? the answer is, the long-continued, more or less complete, suppression of the perspiration. The constant results of complete or partial covering of the skin with oil, varnish, etc., are albuminuria, and diminished quantity of urine, fall of temperature, dyspnea, convulsions, coma, and death. Corresponding *post mortem* to these symptoms are diffuse nephritis, pneumonia, myocarditis, and hepatitis. Some observers consider that death is due to increased radiation of heat from the distended superficial capillaries; others attribute it to uræmia, and the crystals of triple phosphates which are found in the bodies of animals so treated are products of urinary decomposition. Lang clearly explains the uræmia as being caused by disease of the looped renal tubules; since excretion of water by the skin is stopped, and the lungs cannot compensate, the tubules are blocked up, and retention of urine brings about the uræmia. Lassar supposes that the sudden determination to the internal organs of blood very much cooled at the surface of the lung, is itself a cause of inflammation. An identical train of symptoms follows extension of superficial scalds. The identity in symptoms and *post mortem* appearances between primary or scarlatinal nephritis, and those brought about by artificial suppression of cutaneous secretion, however produced, justifies the conclusion that in scarlet fever the same causes, viz., the suppression of perspiration, induces the same effects, viz., nephritis and uræmia. Barthez and Rilliet put forward the idea, in which they were supported by Baginsky, that the albuminuria depended upon the non-conversion into epithelium, for which it was destined, of certain albuminous matter in the blood, which was, therefore, excreted by the urine. Bohn opposed this view, and showed how the function of the skin is impeded by the œdema of the cutis, and the dead and stiffened epidermis. From this point of view the scarlatinal nephritis would seem not to be a local expression of the primary disease, and still less due to taking cold (that scape-goat of etiology, as Bartels says) during the desquamation stage, but to be a direct consequence of the fever from the conditions of the skin.—*London Med. Record*, Feb. 15, 1881.

Surgery.

Lister's Antiseptic Treatment in Surgical Wounds.

BOECKEL (*Gaz. Méd. de Strasbourg*, Dec. 1, 1880) gives a table of statistics of major amputations performed by himself, some with and some without antiseptic precautions. Fifteen amputations of the thigh were performed antiseptically with four deaths, and seven were treated otherwise with three deaths; eighteen amputations of the leg were treated antiseptically without a death, and nineteen treated in other ways with four deaths. In going into the causes of death, the author concludes that in neither case can the deaths be attributed to the method of dressing employed. Nevertheless, he thinks that the advantage is decidedly with the cases treated antiseptically, on account of the rapid healing, the absence of fever and of suppuration, and the rarity of the dressings in these cases. He mentions the occurrence of aseptic fever in a few cases, and, with Edelberg, he attributes this to absorption of blood from the wound.—*Lond. Med. Record*, Feb. 15, 1881.

Statistics of Congenital Colour-blindness in Denmark.

Dr. O. E. DE FONTENAY has explained (*Nordiskt Medicinskt Arkiv*, vol. xii., 1880) the progress which has been made in Denmark as to the relations existing between daltonism and the practical pursuits of life. The authorities have carefully examined all the persons engaged on the railroads in order to ascertain the proportion of daltonians (the colour-blind), and all candidates for employment on the lines are hereafter to prove that they are endowed with an adequate sense of the perception of colour. These requirements, however, have not yet been sanctioned by law in reference to the sailors of the navy or the merchant service, except so far that candidates of the school of naval officers are subjected to an examination such as that just referred to.

The author adopts the classification of cases proposed by Holmgren, namely, into (1) total blindness as to colours, and (2) partial blindness, subdivided into complete blindness to red, green, or violet, and incomplete blindness as to those colours. He gives a complete list of the results of his researches, founded on 217 cases, giving information as to the ages and social position of the persons affected, the colour of their eyes, and the degree and kind of daltonism in each. In 9659 cases examined at all ages (beginning at eight), of all classes, and in the whole of Denmark, 217 were daltonians. As to social position, 1001 persons belonging to the superior classes presented 31 with defective vision, or about $3\frac{1}{2}$ per cent., while 3491 of the lower classes (workmen, small artisan, peasants, etc.) gave 134 daltonians, or rather less than 4 per cent. From some of Dr. de Fontenay's researches it would appear that females are less subject to daltonism than males, for out of 176 cases of daltonism only 11 were females, and of 632 females of the upper classes not one was daltonian, and 16 daltonian females were all of the lower classes. Out of 2714 children from eight to sixteen years of age, there were 41 daltonians, of whom 36 were males and 5 were females. Of 215 cases of daltonism, 56 were cases of red-blindness, 24 of green-blindness, and 135 were incomplete cases; whence it follows that in Denmark red-blindness is more than twice as common as that of green. In all the 217 cases of daltonism the author found that the two eyes were equally affected; but as to the relation between the colour of the eyes and the frequency of daltonism, the statistics showed that there was no special relation between the colour of the eyes and the affection in question.

As to the hereditary character of daltonism no very satisfactory or conclusive

results have been obtained. In 34 cases where the family history was carefully examined, heredity was denied in 27. In two of the cases there was a daltonian father, and in both the daltonism of the father was of the same degree and kind as that of the offspring. One of the cases had normal parents, but a paternal uncle, two brothers, and his own son were daltonians. Other similar anomalies were observed, and one case offered four daltonian members in the family, namely, an uncle and a maternal cousin, the mother's grandfather, and a brother.

In another paper on the same subject, by Dr. E. J. Mellberg, the author states that he has examined, by the method devised by Holmgren with coloured wools, 227 pupils of the Helsingfors Lyceum, and discovered among them 10 cases of daltonism, of which 4 were cases of red-blindness, 1 of green-blindness, 2 of violet-blindness, and 3 of incomplete daltonism.—*Med. Times and Gazette*, March 5, 1881.

Bacteria in the Choroid.

The *Centralblatt für prakt. Augenheilk.* for October last contains a paper by the DUKE CHARLES of Bavaria on the discovery of bacteria in the choroid coat of two eyeballs. The eyeballs, which showed neither naked eye nor microscopical evidence of disease, were preserved in Müller's fluid. On examination the vessels of both the coarser and the finer vascular network of the choroid were found closely packed with bacteria. They were especially abundant in the larger capillaries just before their ultimate divisions and in the finest capillaries themselves, and least numerous in the small arteries and veins. There was no sign of decomposition of the eyes, nor were any organisms found in the Müller's fluid, in which they had been immersed, while other globes contained in the same vessel did not present any similar appearances. These, together with the fact that the bacteria were only in small numbers in the veins and closely packed in the capillaries, negative the supposition that they had originated *post-mortem*. The bacteria were cylindrical rodlets about half the length of the nucleus of a leucocyte, with a clearly defined outline, homogeneous, glistening, and structureless contents. Besides these, some bacilli from five to twenty times their length and some of the small rods undergoing division were found. They mostly resembled the forms of organisms seen in septic diseases and in decomposition, and they differed from the bacilli of splenic fever by their greater thickness and the slight rounding of their ends.—*Lancet*, Jan. 29, 1881.

Treatment of Cancer of the Tongue.

In the December number of the *Bull. et Mém. de la Soc. de Chir.*, is a report of a communication by M. VERNEUIL on the inutility and danger of any save operative treatment of epithelioma of the tongue. This disease, it is pointed out, has never been cured either by internal treatment or by topical applications. M. Verneuil states that he seldom meets with a case of lingual cancer which has not previously been treated by iodide of potassium. Such treatment, it is argued, cannot be justified. It is a gross error to think that iodide of potassium has any efficacy in instances of true neoplasm, for, as is well known, this agent effects no amelioration in cancers of the lip, cervix uteri, and other organs. The diagnosis of epithelioma of the tongue, in the majority of cases, should not be difficult; and, through the recent teaching of M. Fournier, this affection may be readily distinguished from tertiary glossitis. There are, it is true, hybrid cases in which the cancer occurs in a subject of old syphilis, and in which the objective characters of the epithelioma are modified by the constitutional affection. This condition does not indicate any alteration of treatment, for the hybrid affection in its

course, termination, and prognosis, resembles pure epithelioma, and should be dealt with in a like manner. M. Verneuil asserts that medicinal treatment of cancer of the tongue is not only fruitless, but also hurtful. Surgical removal of the disease is postponed, and so much precious time is lost. Iodide of potassium often excites troublesome and obstinate glossitis, and mercury stimulates the growth both of the primary epithelioma, and of any affected cervical glands. Chlorate of potash is as useless in cases of cancer of the tongue, as it would be if given for the relief of cancer of the cervix uteri. Epithelioma of the tongue, M. Verneuil holds, if taken in time, may be cured by operation. Mention is made of four cases of complete cure. In three of these cases the growth was small and superficial; in the fourth case a relapsing growth, together with a degenerated gland, was removed. When more than a third of the tongue has become involved, when the floor of the mouth is also affected, and when the disease has been progressing for longer than a year, the case is deplorably grave, and cannot then be treated by operation with any chance of success. Removal of lingual cancer, it is asserted, is not a serious operation when it can be performed by the mouth, and when the disease is recent and not extensive. Of two hundred such operations performed under these conditions by M. Verneuil, one only was fatal; and, in this instance, the death was due to pneumonia, and not directly to surgical action. Operation at an early stage of the disease is strongly recommended; and it is stated that between the early and favourable stage, and the advanced and hopeless stage, there is a long interval, at any period of which the surgeon may operate without risk, and with some prospect of permanent success.—*London Med. Record*, Feb. 15, 1881.

Extirpation of the Pylorus.

Prof. BILLROTH makes the following contribution to the *Wiener Medicinische Wochenschrift* (Feb. 5):—

"We to-day register a triumph which surgical art has recently been enabled to celebrate. The important question which has so long engaged the attention of surgeons—whether the carcinoma which so frequently attacks the stomach, and for which all internal remedies are useless, may not be made amenable to operative surgery—would seem to be at once decided affirmatively. On January 29, Prof. Billroth performed a partial excision of the stomach on account of advanced carcinoma of the pylorus, which up to the present time has been attended with success. Already, seventy years ago, Karl Merrem had shown in a dissertation, by experiments upon dogs, that the pylorus might be excised, and recommended the procedure in incurable cancer. The conviction, however, that the vital processes in man and animals were the same, was as yet too little assured, and operative procedures too little advanced, for the operation to be ventured on. It is only during the last ten years that essential progress has been made in this province of surgery; and Billroth and his pupils have done much in that time to prepare the way for the operation. After Billroth had shown, in 1871, that portions of the œsophagus may be cut out in dogs, Czerny first performed this operation in man. Then followed Gussenbauer's and Winniwarter's excision of portions of the intestinal canal and stomach in dogs, and Martini and Gussenbauer's successful excision of a sigmoid flexure that had undergone cancerous degeneration. Gastrorrhaphy, successfully performed by Billroth in 1877, was another step in advance, and led him to make the remark that from this operation to the excision of a cancerous portion of the stomach required but one bold step. The first, however, who performed excision (in 1829) for cancerous pylorus in man was the Parisian surgeon Péan, so well known for his numerous laparotomies,

but the patient died on the fourth day; and no suitable case came under Billroth's notice until the present one.

"The woman upon whom the operation was performed on January 29 was forty-three years of age, and previously in good health, having borne eight children. In October, 1880, she suffered from vomiting, and soon presented all the symptoms of carcinoma of the stomach and stenosis of the pylorus. During the six weeks prior to the operation the constant vomiting and the small amount of nourishment taken led to excessive pallor, emaciation, small and frequent pulse, and exhaustion; so that the patient, feeling her end approaching, consented to the operation proposed by Billroth. The preparation for the operation, which was performed in a temperature of 24° R. (86° Fahr.) under chloroform, consisted only in washing out the stomach with the ordinary tube. An incision about eight centimetres in length was performed over the tumour, which was readily movable under the thinned integuments. The tumour proved to be a nodulated carcinoma of the pylorus, which was in part infiltrated, and occupied more than the lower third of the stomach. The parts were carefully separated from the omentum and transverse colon, and, the vessels being tied before their division, very little blood was lost. The tumour having been completely brought on to the integuments of the abdomen, an incision was made through the stomach one centimetre beyond the infiltrated part—first only backwards, and then through the duodenum. An oblique incision through the stomach was next directed from above and inwards to below and outwards, always at a distance of one centimetre from the infiltrated parts. After uniting the oblique incision only sufficiently to allow of its being adjusted to the duodenum, the tumour was completely separated from the duodenum, one centimetre distant from the infiltration, by means of an incision parallel to that made in the stomach. The duodenum was adapted to the aperture left in the stomach, about fifty sutures of carbolized silk in all having been employed during the operation. After cleansing with a 2 per cent. carbolic acid solution, and the application of a guard-ligature, the parts were replaced in the cavity of the abdomen. The operation, including a tedious chloroformisation, occupied one hour and a half. The excised portion consisted of fourteen centimetres of the greater curvature of the stomach, and a quill could only be passed with difficulty through the pylorus. The form of the stomach was not essentially changed by the operation, the organ only being rendered smaller. After the operation there was neither vomiting nor pain. . . . From a communication of Prof. Billroth on February 13, it appears that the patient had continued to improve, so that the recovery then seemed assured. The result is indeed favourable beyond all expectation, and already suffices to show that such an operation is practicable, so that persons may now be successfully treated for a disease hitherto reputed incurable; and even when a relapse takes place, they will at least have received temporary alleviation."—*Med. Times and Gazette*, March 5, 1881.

Excision of the Initial Syphilitic Sclerosis, and on the Treatment of Syphilis.

In the *Weiner Med. Presse*, Nos. 27, 28, 29, 1880, Professor ZEISSL opposes the view that the initial sclerosis is only a local symptom whence the general infection takes place; he believes the initial lesion to be the first expression of the general infection of the patient's system. The author also relates five cases of excision of indurated sores, in all of which general syphilis followed, notwithstanding the removal of the initial lesion. In the treatment of syphilis the author speaks favourably of Zittmann's decoction, but states that he has not found benefit from iocarpine.—*Lond. Med. Record*, Feb. 15, 1881.

Suprapubic Operation of Lithotomy.

Dr. PETERSEN (*Archiv für Klin. Chir.*, Band xxv. s. 752) considers that the dangers of the high operation for stone, which consists in injury of the peritoneum and infiltration of urine, may be prevented by modern methods of operation. He has found, by observation on eleven bodies, that when Braune's method is followed by the gradual distension of the rectum, the full bladder is dragged further forward and upright, and the peritoneum thus rises considerably with its anterior fold, much more so than when this is not the case. Petersen, therefore, has recently always operated in such a manner that he not only fills the bladder to the utmost, but the rectum also, by the introduction of a rectal tube, and the gradual injection of water of the same heat as the body, so as to dilate it. In his last two operations, Petersen did not even see the peritoneum; while, in his earlier operations, he was obliged to push it upward. He considers that the danger of infiltration of urine may be overcome by careful suture of the bladder with fine catgut, under complete antiseptic precautions. The special indications for the high operation he sets out as follows: (1) The presence of a large hard stone; (2) encapsuled stone; (3) stone in diverticula, behind the prostate gland; (4) enlargement of the prostate gland; (5) hæmorrhoids; (6) fat subjects; (7) tumours of the bladder; (8) impermeable stricture (with the assistance of posterior catheterization).—*London Med. Record*, Feb. 15, 1881.

Simultaneous Ligation of Carotid and Subclavian for Aneurism of the Arch of the Aorta.

A case of successful ligature of the right subclavian and right common carotid arteries simultaneously, for aneurism of the arch of the aorta, under the care of Dr. J. MANSENGH PALMER, surgeon to the Armagh County Infirmary, deserves record. The patient, a woman aged fifty, was admitted to the hospital on Feb. 10th, 1880, having noticed a slight swelling close to the right sterno-clavicular articulation during the previous November. On the night of the 12th Dr. Palmer found her suffering from great difficulty of breathing, stridulous respiration, lividity of face and neck, coldness of extremities, and other symptoms which rendered an immediate operation absolutely necessary. She was removed to the operating room, the right common carotid artery was tied, and as the tumour did not appear to decrease and pulsation continued, the subclavian was also ligatured. On the 29th the carotid ligature came away, and on March 2d the subclavian. On April 27th she left the hospital, both wounds being quite healed. Early in June she caught cold and was readmitted to the Infirmary, but refused to take any medicine. On June 14th hæmorrhage took place from the old cicatrix in the neck over the carotid vessel, being complicated with hæmoptysis, which also occurred on the following day, and on the 10th there was profuse hæmoptysis and death supervened 125 days after the operation. A post-mortem examination showed that the aneurism involved not only the arteria innominata, but also the arch of the aorta, while at the posterior and left side of the arteria innominata was an opening communicating with the left vena innominata, which latter communicated with the trachea at one point and at another opened into the right lung.—*Lancet*, March 5, 1881.

Three Cases of Knee-joint Abscess in Children.

Mr. EDMUND OWEN, Senior Assistant-Surgeon to St. Mary's Hospital, at a late meeting of the Medical Society of London (*Lancet*, Feb. 12, 1881), exhibited three patients who happened to have been lately under treatment

together, and are, indeed, the only instances in which he has recently had occasion to open the knee-joint for suppurative arthritis. Short as the series is, these cases offer, he thinks, "an interesting subject for discussion and criticism; and especially so as you have just had the opportunity of examining the present condition of the joint in each instance. The eldest child only was treated by me as an in-patient; the others were brought as out-patients to the Children's Hospital.

"Briefly, the line of treatment has consisted in free incisions into the joint and subsequent free drainage; in absolute and prolonged rest of the limb with compression of the articulation; in constitutional and dietetic support, and (need I say it?) in local cleanliness. But having remarked that I have employed cleanliness in the treatment of these diseased and opened joints, the conclusion that I adopted the high ritual of spray and the vestments of gauze would be both hasty and inconsequent. I wish it, however, to be thoroughly understood that I did my best to keep the articulations clean, both on the exterior and in the interior. I would like it to be understood also that by no means do I bear the spray and gauze ill-will; I even look upon them as a kind of safety-lamp which may well be carried by those who work in an atmosphere of surgical fire-damp, as well as by those who, trespassing in the seductive regions of speculative surgery, may on occasion require evidence of their having started on their excursion without neglect of approved precaution. To the great champion of cleanliness in our art I personally owe a boundless debt of gratitude, but to certain of his enthusiastic disciples who, to speak within bounds, seem to consider those who do not adopt their creed as wilfully obstinate or morally oblique, I will delicately put this question: Could any other method of treatment have obtained better results than those which we have now before us?

"Our medical journals are continually called upon to publish reports of cases, trifling and serious, which have recovered after 'antiseptic treatment,' that this short series out of the groove cannot now but be of interest. Possibly even they may help to show that *post* and *propter*, when employed in connection with a certain surgical practice, need not be confused even when half-observed in a cloud of carbolyzed vapour.

"The first case is that of a girl of about four years of age. A little more than two years ago she was brought into the out-patient room in Great Ormond Street in a most pitiable condition. The left knee was red and enlarged from a collection of fluid in the interior. So painful had the joint been that appetite and sleep had left her. Moreover, she had had several attacks of convulsions—the rigors of childhood. Ten months previously, the mother said, the child had fallen off her chair, and directly afterwards the knee had begun to swell; but though the swelling had steadily increased, the child had been able to limp about until three weeks ago. The whole limb was red and swollen. She was at once put to bed, and the Registrar (Dr. Abercrombie) going round next morning noted that the leg and thigh were the seat of erysipelas, and that there were several blebs on the leg. The glands in the groin were enlarged and tender. Though there was a small sinus leading towards, or into the joint, from the inner side, from which a thin fluid was oozing, the patella was floated from off the femoral condyles. The temperature was just under 101° Fahr. On the third day after her admission—that was when I next saw her—chloroform was administered, and a free incision was made on each side of the knee, much thin pus escaping. The finger passed into the interior of the joint detected much thickened and pulpy synovial membrane, but no diseased bone. The joint having been thoroughly washed out with a weak solution of chloride of zinc, a drainage-tube was passed through it, and the limb was put up again on a slightly bent tin splint.

Nevertheless, the erysipelas continued to advance, and blebs now had made their appearance on the thigh, and the temperature went up two or three degrees. The child was taking quinine, iron, and wine; in less than a week the temperature began to track the chart along the normal line. For convenience in the washings, which were daily performed by the house-surgeon, Mr. Kempe, the back splint was changed for extension by the stirrup, weight, and pulley. A month after her admission the joint was strapped, the drainage-tube still lying in the outer wound; and at the end of another like period she was taken home in excellent condition, the wound, though steadily closing, still weeping a little. But at home she did not prosper, and in three weeks she was again in hospital for ten days. Since that time she has steadily improved, the limb being fixed upon a back tin splint. It is no exaggeration to say that in function and movement the damaged knee is now as good as the other. The child runs about on it all the week, and kneels upon it on Sundays. It is absolutely free of pain.

"The second case is that of a little boy. The mother says that the disease was started by a fall out of bed upon the knees, after which the right joint began to swell. At the beginning of last year he was sent to me by Dr. Goulet, of St. John's Wood, for an attack of subacute synovitis. The child was then under a year and a half old. We fixed the limb on a tin splint, and Dr. Goulet looked after the child until April, when, in spite of the treatment adopted, the inflammation had run on to suppuration. In this case only one incision was made into the joint, and that on the inner side. The solution used for washing was weak tincture of iodine. Three days after that operation it was noted that the child had lost its thirst, and that its nights were quiet. Previously it had been in the habit of starting in its sleep and awaking with a scream. Seven months later it was remarked at the side of the prescription-paper, under the date of Nov. 17: 'Has been wearing the splint up to to-day. The wound has healed, but there is a good deal of eczema around its site. There is good flexion and power of movement in the joint, but there is still some fulness about the ligament of the patella from the old thickening of the synovial membrane. The health is excellent.' There is no tenderness at the knee, which can be bent, without disturbing the child, to less than a right angle. Though the skin over the old wound is not sound-looking it is serviceable enough, and the child cruises about the room without inconvenience.

"The last case is that of a baby of four months, who was brought as an out-patient from Hendon at the end of last June. Against his name in the case-book I then wrote: 'Subacute synovitis of the left knee-joint,' and fixed the limb on a bent splint with strapping and soft bandage. But by the tenth day it was evident that a purulent collection occupied the synovial pouch. Excessive pain in the part had driven away sleep, and the child had attacks of convulsions. The knee was red, hot, swollen, and very tender. By means of incisions, and injections of weak tincture of iodine and water, much thin sero-purulent fluid and flakes of thick and curdled pus were washed out of the joint, and the limb was then packed round with vaseline lint and tenax, and fixed to a splint. Gradually the splint was straightened, and by the middle of September drainage was discontinued, and the wounds healed up. The child never had a bad symptom. In October last there was free movement in the joint, and the infant was flourishing; and, as you have seen to-night, the child allows full examination of the capabilities of the joint to be made. He even flexes it of his own accord; and, his mother says, tries to walk on it.

"I am well aware that there is nothing of an extraordinary nature in these reports and cases, unless it be the simplicity of the treatment adopted. A treatment somewhat similar to that described by Mr. Sampson Gamgee (*On the*

Treatment of Wounds, p. 101), with this exception—improvement, I will call it—that the pus is straightway washed out of the joint, instead of being allowed to ooze out. So the joint gets a well-considered and fair start towards the goal of recovery.

"In conclusion, I will venture to express the opinion that the chief requisites for obtaining such happy results in the treatment of acute joint-abscess in childhood are the early employment of clean and free drainage and the prolonged continuance of absolute rest. And these are conditions which are fortunately very generally obtainable."

—

*A Case of Gangrene of the Arm from a Poisoned Wound—Amputation
at the Shoulder, and Recovery.*

MR. HEATH reported this case at a recent meeting of the Clinical Society of London (*Med. Times and Gazette*, Feb. 26, 1881).

The patient was a nurse, aged thirty-four, who, in laying out the body of a lady who had died of puerperal septicæmia, pricked her thumb with a pin. Notes of the puerperal case were given by the physician who had attended her, and it appeared that she was a primipara in good health, and was the first patient attended by the accoucheur after his holiday, and that strict antiseptic precautions were employed. On the fourth day a rigor occurred, and the temperature was 105°, pulse 120. Subsequently the temperature went up to 107°, but was reduced to 102° by an ice-cap and water-bed. On the seventh day, however, the left pleura filled, and the patient sank. A nurse in attendance pricked her finger on the day of the rigor, and had a sharp attack of lymphangitis, with recovery. The second nurse carried out the attendance till the patient's death. This nurse applied nitrate of silver to the puncture on the evening of the day she received it, and the next day the hand was swollen and painful. She had no further advice until the fourth day, when she was admitted to University College Hospital with the whole arm swollen and tense. Free incisions were made, but the next day the hand and forearm had gangrened. At first, the gangrene seemed limited to the forearm, and the swelling of the upper arm decreased for a few hours, but a relapse taking place, Mr. Heath amputated at the shoulder-joint. The patient made a rapid recovery, and was discharged in a month. Mr. Heath remarked upon the virulence of the puerperal poison, and protested against the common practice of applying nitrate of silver to punctures received at post-mortems. He believed that the application of belladonna was most useful in cases of local inflammation, coupled with free incisions when necessary.

MR. HARRISON CRIFFS gave the history of the case referred to by Mr. Heath as occurring in St. Bartholomew's Hospital. The patient was under the care of Mr. Holden, and was both healthy and temperate. He had pricked his finger very slightly; next day it began to swell, and when seen the arm was black as far as the wrist, the forearm was red. Free incisions were made in the hand, but only a little clotted blood and serous fluid came away. The swelling and redness rapidly extended upwards. It was consequently determined to amputate through the shoulder-joint, but some diseased tissue had to be cut through. Next day the temperature had fallen and the pain gone. Six days afterwards there was a severe rigor, and the neck swelled. This was punctured, but nothing came away; his face subsequently became gangrenous, and the man died. In Mr. Heath's case recovery was no doubt due to early operation. It would be important to know when and where to operate in such case.

MR. LISTER thought the cases only tended to confirm the old rule to operate at once in a case of spreading gangrene. In these cases there was probably an

organism at work, as in the case of the *Bacillus anthracis*. But in some the blood was specially affected, or, as in Mr. Heath's case, the tissues.

Mr. HEATH said, in reply, that the rule was not only to operate early in these cases, but also to operate high up.

The Treatment of Malignant Pustules.

M. VERNEUIL, in an important communication to the Académie de Médecine on this subject, reminded his hearers that the malignant pustule consists of three zones or regions: first, the slough or gangrenous zone with its characteristic vesicles; secondly, an indurated zone presenting on its surface other vesicles; and, lastly, the zone of œdema. Until recently surgeons have concentrated their attention on the central or gangrenous zone, have applied almost no treatment to the indurated zone, and always none to the zone of œdema beyond poulticing and leeching. According to M. Verneuil it is important to apply to each zone special and energetic treatment. These are—first, to destroy or excise the gangrenous part; secondly, to incise and cauterize deeply the zone of induration; thirdly, to disinfect, by antiseptic hypodermic injection, the zone of œdema; lastly, to employ general antiseptic treatment, such as the internal administration of iodine or some other efficient internal antiseptic. The experiments of Davaine have shown that iodine, even in small doses, has an efficient neutralizing action on the virus of anthrax, and it is possible, according to M. Verneuil, to introduce into the circulation a sufficient quantity of iodine to produce this effect. The hypodermic injections into the œdematous zone should also consist of iodine, ten drops of a one-half per cent. solution. The first case thus treated was one of malignant pustule on the arm, in which the actual cautery had failed, and amputation was contemplated; the treatment was perfectly successful. In another case the pustule was situated on the eyelid, inoculation having been effected by inadvertently scratching a pimple there. The eyelid was much swollen, and presented the characteristic vesicles and bullæ, and there was considerable œdema of the whole of that half of the head. The temperature was 103°; the patient was delirious, sleepy, and vomited continually. The pustule was destroyed by means of the thermo-cautery. In the zone of induration a series of punctiform cauterizations were made with the same instrument, to a depth of one-third of an inch, and then the solution of iodine was injected in the œdematous part at intervals of five centimetres. The temperature rapidly fell. The delirium, somnolence, and vomiting ceased as if by magic, and on the third day the patient was out of danger. In the discussion which followed M. Léon Labbé agreed with M. Verneuil as to the necessity of cauterization in the zone of induration, and employed it even in the œdematous region. He was inclined to attribute more importance to this measure, employed in an energetic and even, as it might seem, barbarous degree, than to the injections of iodine. M. Gosselin urged the importance, before applying the treatment to every pustule which had a malignant aspect, of ascertaining if it were really anthrax, by microscopical examination of the serum in the vesicles and of the blood. M. Verneuil, speaking from the standpoint of practical surgery, maintained that better indications could be drawn from the clinical aspect of the affection than from the presence or absence of bacteria. He had seen cases in which bacteria were found in the vesicles and in the blood, although the symptoms were benign, and others in which, in spite of the absence of bacteria, the augmenting gravity of the affection necessitated the use of the most energetic remedies.—*Lancet*, Feb. 19, 1881.

Midwifery and Gynæcology.

The Distance between the Fontanelles as an Index of the Size of the Fœtal Head.

Dr. J. MANDELSTAM has published in the *Archiv für Gynäkologie* the results of an investigation into the relation which the distance between the anterior and posterior fontanelles bears to the other dimensions of the fetal head. This measurement—viz., the distance between the fontanelles—is one which may be estimated before the head has entered the pelvis; and if its relation to the degree of ossification and the size of the head be constant, it is obvious that it may be made to give us information of great value in deciding as to the best course to follow in the management of a particular labour. Fehling has shown that there is a relation between the size of the anterior fontanelle and the horizontal circumference of the head; but this knowledge is of little use in practice because the over-lapping of the bones during labour alters the size of the fontanelle. It has also been shown that there is a relation between the distance from the anterior to the posterior fontanelle and the length of the child; but the latter is not a very important factor in the mechanism of labour. Dr. Mandelstam has therefore set himself to ascertain whether the distance between the fontanelles bears the same constant relation to those diameters of the fetal head upon which the ease or difficulty of delivery chiefly depends. As yet he has only commenced the subject. He very properly approached the problem in its simplest form. He measured children's heads three or four days after birth, when the overlapping of the bones and swelling of the soft parts had had time to disappear. He has examined ninety-eight heads, and the results lead him to the following conclusions: That there is a direct proportion between the development of the child and the size of its head, on the one hand, and the distance between the anterior and posterior fontanelles, on the other; if the distance between the fontanelles be great, a large head and a well-developed child may be expected. Should a larger number of observations confirm this statement, we shall have, in the distance between the fontanelles, a datum from which to judge of the amount of mechanical hindrance to delivery which the child will offer; and in the present uncertainty of all other criteria, this is not to be underrated. How far it is possible, at the bedside, to properly measure this distance, Dr. Mandelstam at present refrains from stating; but he believes that a practised accoucheur can in many cases, even when the head is high up, feel the sagittal suture in its whole extent, and therefore form a tolerably accurate judgment upon its length. We feel sure that all who are interested in obstetrics as a science will agree with Dr. Mandelstam as to the uncertainty attending the judgment we are at present able to form, in the early stages of labour, as to the size and compressibility of the head; and we hope that he will continue his researches, and give us definite criteria by which to go.—*Med. Times and Gazette*, Feb. 19, 1881.

Pregnancy and the Acute Infectious Diseases.

A recent clinical lecture of Dr. RUNGE has been devoted to a recapitulation of what is known as to the mutual relations of pregnancy and the acute infectious diseases. It may not be without interest and instruction to our readers if we glean from Dr. Runge's lecture its most important points.

The frequency of abortion, or premature labour, in the acute infectious diseases varies according to the disease (the prognosis for the child being worst in smallpox and in cholera), the character of the epidemic, and (especially in typhoid fever) the treatment. The process of abortion is much the same as

when it takes place from other causes, except that in some diseases, notably typhus and smallpox, there is apt to be unusual hemorrhage. In the later stages of pregnancy, premature delivery is generally without complications.

In considering the causes of foetal death in these cases it must in the first place be asserted that none of these diseases have any special lethal effect upon the fetus. The death of the infant is due to the concurrence of a number of unfavourable conditions, some of which we know, others we do not know. First, the effect of temperature. In all conditions attended with fever the fetus runs a risk which is proportional to the height and duration of the pyrexia; and where these are extreme, it dies from what may with accuracy be called "heat-stroke." As the mother's temperature rises, the beats of the foetal heart increase in frequency, and the child's movements become more active. A maternal temperature of 42° or 42.5° C. (about 108° Fahr.) appears to be absolutely fatal to the child. Risk begins at 40° C. (104° Fahr.). Dr. Runge has confirmed these clinical observations by experiments upon animals.

Next, the effect of asphyxia. It has been clinically ascertained that in diseases interfering with the respiration or circulation the fetus often dies, and its death is preceded by retardation of the heart's action and discharge of meconium—signs which indicate death from asphyxia. Dr. Runge has performed some experiments on animals which afford exact demonstration of the fact that foetal asphyxia is thus caused. He opened the abdomen of a pregnant rabbit, and took out one or more embryos, inclosed in their membranes and with their placentae, and put them in a solution of chloride of sodium. Then, having closed the uterus and abdomen, he killed the animal by suffocation. He found that the embryos which had been taken from the mother and put in the chloride of sodium solution, lived; while those still in connection with the mother while she was being suffocated, died. The inference he draws is, of course, that those taken out of the mother and put in the saline fluid were simply deprived of oxygen, and recovered when oxygen was given them; while those retained in connection with the mother were not only deprived of oxygen, but were poisoned with carbonic acid. It has been found clinically that great anemia leads to foetal death. This is due to deficiency in the supply of oxygen.

The third condition which helps to bring about foetal death is the direct transmission of infectious matter from the mother to the child. This is not so satisfactorily proved as could be wished. All the experimental investigations that have been made tend to show that no molecular contagion can pass the walls of the placental villi. In relapsing fever, for instance, the spirillum is never found in the foetal blood, and mothers suffering from this disease often bear healthy children. On the other hand, patients with variola have borne children suffering from the same disease. It has also been asserted that when women advanced in pregnancy have been successfully vaccinated, the fetus has proved insusceptible to the vaccine virus. This, however, needs further confirmation. Mothers suffering from ague have sometimes borne children with large spleens. With these exceptions, there is no evidence of the transference of any acute infectious disease from mother to child. Even in these such communication is rare.

As to the fourth mode in which these diseases affect utero-gestation—viz., by causing changes in the placenta—little is known. Changes in the endometrium occur in cholera and in typhus, and it is to be presumed that were a patient pregnant such changes would affect the placenta.

The conditions which lead to the premature expulsion of living children in these diseases seem to be the same in kind as those which in some cases lead to foetal death. It has been found, by experiment, that deprivation of oxygen, or cutting off the blood-supply, leads to uterine contraction; and that prolonged

pyrexia also increases the irritability of the uterus. The reason why in some cases the fetus dies, but in others is expelled prematurely, though living, appears to be, that where the injurious conditions mentioned rapidly reach a great height, the fetus is killed; but where their onset is slow, the infant is expelled before the state of things has become such as is incompatible with its vitality.

Hemorrhage into the decidua or placenta will occur to most as a probable cause of abortion in such diseases as are associated with a tendency to hemorrhage. But there is this difficulty about admitting it to be such: that we cannot yet separate the cases in which hemorrhage is a cause from those in which it is a consequence of abortion. Hemorrhagic inflammation of the endometrium, leading to destruction of that tissue, has been found by Slavjansky after death from cholera.

Dr. Runge concludes his lecture with a plea in favour of the experimental method of studying physiology and pathology, and laments that the majority of those engaged in the study of obstetrics and gynæcology busy themselves more with operative technicalities than with the microscope, with chemical analysis, or with the vivisector's knife. It is to be regretted that sentimental legislation obliges English workers in this and other fields to depend upon other countries for the invaluable information which is only to be obtained from experiments on living animals, and of which the experiments of Dr. Runge that we have just quoted are a sample. Dr. Runge's work cannot fail to be fruitful in practical results. He indicates some; but as they are only suggestions we refrain from quoting them.—*Med. Times and Gazette*, Feb. 26, 1881.

Spinal Paralysis in New-born Children.

LITZMANN has contributed to the *Archiv für Gynäkologie* a valuable paper on the above obscure subject. Attention was first drawn to the occurrence of deformities due to spastic rigidity of more or less extensive groups of muscles, and probably caused by lesions of the central nervous system during delivery, by Dr. W. J. Little. His cases, however, were mostly those of children from one to ten years of age, and therefore it was impossible for him to make any precise statement as to the cause or nature of the initial lesion. Since then little has been done at the subject. Litzmann records a case of his own, in which a full-term child presented by the feet in a slightly contracted pelvis. Some traction on the foot was needed to effect delivery. When this traction was begun, the reflex movements of the leg were active; but while it was being pulled upon, a slight cracking sound was twice heard, and the reflex irritability of the foot ceased. The child was born living; but both lower extremities were found to be paralyzed. On the tenth day movements of the toes were perceived. About two months after delivery, reflex irritability and sensation began to decidedly, though slightly, return; but talipes varus, which was present slightly after delivery, became more marked. No treatment was carried out (owing to the objections of the parents) till the child was eight months old. Nevertheless, movement and sensation gradually returned. At this age treatment by faradization was begun, and regularly carried out; but although the child continued to improve, yet the amelioration was not so rapid as to indicate a marked effect from the treatment. Dr. Litzmann believes that in this case the symptoms were due to a lesion of the lumbar enlargement of the cord produced during delivery. He refers to cases published by Seligmüller, Hennig, and Mauthner, which resembled his own in that there was paralysis following birth, and the children recovered. He also quotes others in which an autopsy was made. Parrot has published a case in which the spinal cord was found ruptured without discover-

able injury of the spine. Gueniot and Ahlfeld record cases in which the spine was fractured. Ruge, out of 64 cases of delivery by the feet, found fracture of the spine in 8, mostly in the dorsal or cervical regions. Litzmann believes that in his own case the lesion was probably hemorrhage into the vertebral canal, due to disturbance of the circulation from pressure on the cord. He states that out of 161 autopsies on newly born children made in his clinique, the vertebral canal was opened 81 times, and in 38 of these hemorrhage into the canal was found, in 19 cases the extravasations being of considerable amount. In 23 the blood was wholly external to the dura mater, in 4 also in the arachnoid sac, and in 1 also in the sub-arachnoid space; it was 4 times only in the arachnoid cavity, and once only in the sub-arachnoid space; in none was there any injury to the canal itself. In the cases in which the blood was found in the arachnoid and sub-arachnoid cavities, there was also intra-cranial hemorrhage: 23 of these children were full term, 10 premature; 13 were born dead, and 20 (15 at term, 5 premature) were born alive—all of them head-presentations; 5 of these died within twenty-four hours (4 of them being premature), 12 between the second and tenth day, and the others at the fifteenth, sixteenth, and twenty-eighth day respectively. Extravasations in the substance of the cord were never found. Billard, however, has described changes (softening and disorganization) of parts of the brain and spinal cord in newly born children who were paralyzed.—*Med. Times and Gazette*, Feb. 26, 1881.

Vaginitis Exfoliativa and Dysmenorrhœa Membranacea.

Vaginitis exfoliativa, or exfoliation of the epithelial lining of the vagina, is not an affection frequently observed; yet several cases of it have been recorded, and in some of these it was associated with membranous dysmenorrhœa. In a paper in the current number of the *Archiv. für Gynakologie*, Dr. COHNSTEIN describes an interesting case of this disease which was associated with severe dysmenorrhœa, but apparently not of the membranous kind. The chief interest of the paper, however, lies not in this case, but in the part of it devoted to membranous dysmenorrhœa, and more especially in the attempt therein made to explain the etiology of this form of menstrual disorder. Like most disorders of which we possess little real knowledge, membranous dysmenorrhœa has been the occasion of much theorizing, rather more theorizing than observing—some of it baseless and purely fanciful, and some of it with a show of reason. The attempt made in the paper referred to is quite refreshing in these days, when attention is concentrated upon local changes and mechanism, for it looks for the cause of the disease, not in the uterus or ovaries themselves, but in the general conditions of the system. Indeed, the author maintains that membranous dysmenorrhœa is not the result of local changes but of general disease. In support of this view he brings forward, in the first place, reasons for not regarding membranous dysmenorrhœa as a local affection. They are: 1. In by far the greatest number of cases of metritis, chronic catarrh of the uterus, tumours, etc., there is no expulsion of membranes. 2. Women who present no discoverable change in the sexual organs suffer from membranous dysmenorrhœa. 3. Of sixty-two cases collected, the author finds general disorders three times more frequent than local disease. 4. Cases are known in which a decidua menstrualis has been extruded without suffering. Such cases indicate that a general cause brings about the condition, and dysmenorrhœa is often only incidental. 5. Local treatment of membranous dysmenorrhœa is usually not followed by any good result; sometimes it produces more evil than good. Having given the above reasons for regarding dysmenorrhœa membranacea as not the result of local change, the author proceeds to give his

reasons for believing in a causal connection between hysteria and the disorder, and they are the following: 1. The frequent coincidence of a slight degree of hysteria with nervous dysmenorrhœa. 2. Dysmenorrhœa membranacea is not rarely associated with hereditary troubles. 3. In the course of hysteria the most various anomalies of secretion and excretion occur. 4. The occasional complete disappearance of the membrane, and its return after longer or shorter intervals; such irregularity cannot be due to a disorder of the genital organs. 5. The vaginismus and the suffering lasting through or only coming on during the intermenstrual interval, without apparent disease of the sexual organs. 6. In sixty-two cases collected by the author, in twenty the expulsion of membranes was said to be due to a local cause, while in forty-two it was ascribed to general disorders—as hysteria, anæmia, chlorosis, chronic dysentery, etc. Heartily sympathizing as we do with the author in his attempt to elucidate the etiology of membranous dysmenorrhœa by having recourse to a wider base than the sexual organs, yet we cannot help feeling that with two exceptions the two sets of reasons given—those against regarding the disease as of local, as well as those for regarding it as of general origin—have no bearing upon the question. They prove nothing. The two exceptions are:—1. Women who present no discernible change in the sexual organs suffer from membranous dysmenorrhœa. Had we been able to state that women who present no change suffer, the author's first position would be proved, but it is well known that our means of investigation can discover only very coarse changes, while many even of these elude our search. 2. Were it true that two-thirds of the cases are due to general conditions, the author's second position would be a just inference—that is, that membranous dysmenorrhœa is due to general conditions. But, as a matter of fact, the general conditions presented by two-thirds of the cases were not those now described as the causes of the affection. In some of them, it is true, they may have been so described, but by no means in all. So long as our knowledge of the physiology of the female sexual organs remains in a state of uncertainty and doubt, we cannot expect that the pathology of the same structure will be better understood. The investigation both of the physiology and pathology of these organs is surrounded with peculiar difficulties, and this may be excuse enough for some theorizing upon them; but we feel sure that we cannot arrive at a correct pathology until we arrive at a correct physiology, and any theory of the pathology or etiology of the uterus and ovaries which does not start from physiology will prove true, if at all, by accident only. Here we think Dr. Cohnstein has erred, and consequently missed his mark. We think with him that dysmenorrhœa membranacea has in many instances at bottom a general condition for a cause, though we do not believe it to be hysteria; that condition produces dysmenorrhœa by organic changes in the uterus resulting from it, though these changes may elude our means of research.—*Lancet*, Feb. 12, 1881.

Chronic Complete Inversion of the Uterus.

Dr. ROGERS, at a recent meeting of the Obstetrical Society of London (*Lancet*, Feb. 5, 1881), related a case of Chronic Complete Inversion of the Uterus, successfully treated by sustained elastic pressure. S. B—, aged twenty-nine, had a child two years ago. Delivery was followed by great flooding, and menorrhagia has continued more or less ever since. On admission a tumour was felt in the vagina, as large as a turkey's egg; a ring encircled its neck, but the sound could not be passed more than a line or two above this. On April 28, Dr. Aveling's double-curved repositors was applied, and adjusted by Dr. Aveling. After twenty-four hours the strings were tightened, the patient being very comfortable. About sixteen hours later she felt great relief; something had given way, and the strings

had become loose. On examination the repositor was found within the uterus high up, and was removed without difficulty. The uterus was completely restored.

Dr. AVELING stated that, since he invented his repositor last year, five cases had been successfully treated by it.

Medical Jurisprudence and Toxicology.

Diagnosis of Blood Stains by the Micrometric Method.

In a lengthy letter to *Gaillard's Medical Journal* (Jan. 1881), Dr. J. G. RICHARDSON presents the following summary of the final results of his studies upon the measurement of red blood corpuscles and its bearing upon the diagnosis of blood stains.

1st. That in unaltered blood stains as ordinarily produced by the sprinkling of drops of blood upon clothing, leather, wood, metal, etc., we can by tinting with aniline or iodine distinguish human blood corpuscles from those of the ox, pig, horse, sheep and goat, wherever the question is narrowed down by the circumstances of the case to these limits.

2d. By the method I have devised we can measure the size of the corpuscles and apply the two corroborative tests of tincture of guaiacum with ozonized ether and of spectrum analysis to a single particle of blood-clot weighing less than one fifteen-thousandth part of a grain, a quantity barely visible to the naked eye.

3d. Hence, when an ignorant criminal attempts to explain suspicious blood spots upon his clothing, weapons, etc., by attributing them to the ox, pig, sheep, or goat, or to any of the birds used for food, we can, under favourable circumstances, *absolutely disprove* his false statement and materially aid the cause of justice by breaking down his lying defence, even if twenty years have elapsed.

4th. But if the accused person ascribes the tell-tale blood to a dog, an elephant, a capybara, or any other animal in Dr. Woodward's list, it is useless to attempt to dispute his story, on microscopical evidence as to the size of the blood corpuscles.

5th. In cases of innocent persons wrongfully accused of murder, and really stained with the blood of an ox, pig, or sheep, testimony of experts founded upon measurement of the corpuscles would be valuable, but less conclusive, because under certain circumstances human blood corpuscles may *shrink* to the size of those of the ox, whilst under no known conditions do ox or pig corpuscles *expand* to the magnitude of those in human blood.

6th. In order to do away with ingenious objections of lawyers that the murdered person may have been affected with some disease which altered the size of his blood disks, or that the articles of clothing, etc., upon which the stains were deposited had produced chemically or otherwise some similar change in their magnitudes, it is very important to obtain promptly, stains from the fresh blood of the victim made in the presence of witnesses upon portions of the prisoner's clothing or weapons analogous to those upon which suspicious red spots are found when he is arrested. When this cannot be done spots of the murdered person's blood sprinkled on white paper, and fragments of his lungs and kidneys should be carefully preserved, the former by rapid drying and the latter by preservation in diluted alcohol. These little precautions, which may in any instance prove to be of infinite importance, should be earnestly impressed upon coroners, district attorneys, and policemen throughout the civilized world.

MEDICAL NEWS.

THE DANGERS OF DISEASED MEATS.

At the present time popular attention is so generally aroused to the possibility of infection from unsound meat, by the promulgation of a French edict against the importation from America of trichinous pork, and the rumored embargo upon our meat in England on account of an imaginary epidemic of "hog cholera," in the Western States, that the moment seems an opportune one for discussing what may prove a far more serious danger to ourselves from diseased animals used as food, viz., the transmission of consumption by the flesh and milk of cattle affected with tuberculosis.

Since it is estimated by competent authorities that only about one-fourth of the cases of phthisis in the human race can be traced to hereditary influence, it has long been supposed by medical philosophers that there must be some unknown predisposing cause to the formation of tubercle, which, acting in concert with the great exciting cause in our climate of atmospheric vicissitude, determines the advent of consumption in many of the instances which go to make up the remaining three-fourths of the mortality from this fatal disease.

The experiments of Villemin and Burdon Sanderson in 1865, seemed to show that (contrary to the previously received opinion) tubercle was easily inoculated, especially upon rabbits and guinea-pigs, but they were, as is well known, corrected by further observations which demonstrated the curious fact that the production of a suppurating wound by the introduction of an inert substance, such as a fragment of paper or India-rubber, beneath the skin of one of these animals, was often followed by general tuberculosis. Some more recent investigations of Prof. Chauveau, of the Lyons Veterinary School, are so devised as to eliminate this disturbing element of a surgical operation, and appear to indicate that tubercle can be readily conveyed by the ingestion of tubercular animal tissues. Chauveau purchased upon one occasion four healthy calves, made them each swallow about an ounce of tubercular matter from an old cow's lung, and repeated the dose to three of them at short intervals. Within a month these three presented a miserable aspect as compared with the fourth, which had escaped infection, and when killed, they showed on post-mortem examination a condition of general tuberculosis, the local lesions of the intestines and mesenteric glands, constituting *tuberculosis mesenterica*, being particularly well marked. The lungs were studded with

caseous nodules and the bronchial glands were involved, but the spleen and kidneys were not affected.

Prof. Orth, of Göttingen, so well known by his excellent work on Pathological Anatomy, has very lately published his opinion deduced from his own experiments, which corroborate those of Chauveau and others, that the transmissibility of tuberculosis from one creature to another in this way is now *proved* to occur, and that it is highly probable human beings have often been thus infected from the brute creation. In Prof. Orth's investigations, out of fifteen animals which were fed with tuberculous material from a diseased cow, nine were infected and four died. Autopsies of the diseased beasts revealed a general tuberculosis of nearly all the organs.

Nor is this dangerous infective property confined to the meat of diseased animals, for Prof. Bollinger, who is associated with Prof. von Pettenkofer in the celebrated Hygienic Laboratory of the University of Munich, asserts that the milk of such creatures has a pre-eminently contagious influence, and reproduces tubercular disease in others to which it is administered. According to his experiments even boiling the milk does not destroy its injurious properties in this respect.

With such a probability as these various investigations establish, that consumption, the most dreaded malady of northern latitudes, and the disease which leads the mortality lists of most large cities, is often propagated by the ingestion of meat and milk from tuberculous animals, it is surely time that energetic efforts should be made by our legislators for the prevention of traffic in food which is so dangerously diseased. Dr. Noah Cressy, V. S., of Hartford, Connecticut, several years since called attention to this important subject, and in a recent paper in the State Board of Health Report ably urges that steps should at once be taken to stamp out the affection from among our cattle, with the reasonable hope that by breeding only from stocks of acknowledged purity, combined with proper sanitary care of the animals (especially the utter abandonment of stall and swill feeding), we might afterwards be able to preserve our herds free from taint of this disease. Of course only the most earnest and persistent trial of this plan could be successful, and in many cases it would probably be advisable to completely destroy the stables which had become infected by sheltering animals suffering from the malady. A necessity for this extreme precaution is indicated by the results of observations made by Dr. Grad, of Alsace, who on visiting a farmer in his neighbourhood was informed that annually for five years one of his cows had died of consumption in a certain stall. In order to test the question of local infection, Dr. Grad, with the consent of the owner, selected a vigorous three-year-old heifer of perfectly healthy pedigree, and placed her in the supposed fatal stall. For a time the animal continued well, but after calving, a slight cough set in and this gradually increased, emaciation took place, until

when inspected a year later the creature was a mere shadow of her former self, and presented all the symptoms of advanced tuberculosis. In this case it is naturally to be inferred that the malady was transmitted by the ingestion of tuberculous matter, which had been coughed up on the stall by animals which had previously occupied it. Nevertheless, it is highly probable that, in some instances at least, the infection is conveyed to a healthy creature from a sick one, especially in the latter stages of the complaint, by inhalation of the breath charged with tuberculous matter. Dr. Tappeiner's experiments, which are very instructive upon this important point, are as follows. He caused eleven puppies to inhale fine particles of tuberculous matter distributed through the air of the room in which they were confined, by the aid of a steam atomizer. Within forty days, when the animals were killed, ten of them showed well-marked miliary tubercle in both lungs, and, although such a series of experiments is alone by no means conclusive, its results are so corroborated by occasional events in the experience of most physicians of large practice in pulmonary diseases, that no system of prophylaxis against phthisis can at present afford to ignore their teachings.

Indiana State Board of Health.—A bill has passed the Indiana Legislature authorizing the Governor to appoint a State Board of Health.

Treatment of Extra-uterine Pregnancy.—At the meeting of the Medical Society of the County of New York held Feb. 28, 1881, Dr. WILLIAM T. LUSK read a paper upon this subject in which he advocated the use of the faradic current, according to the method proposed by Dr. Allen, of Philadelphia, for the destruction of the fetus, which he prefers to leave for absorption, unless its presence excite too grave local and general symptoms, when laparotomy, conducted antiseptically, should be resorted to.

Index Catalogue of the Library of the Surgeon General's Office.—The final action of Congress, looking to the continued publication of this work, has resulted in the appropriation of \$10,000 for the publishing of vol. ii., which will, it is estimated, about cover the cost of type-setting and stereotyping; for its issue we will have to possess our souls with patience until another appropriation can be had. In the mean time, much can be effected if the members of the profession will exercise their personal influence upon members of Congress in favour of liberal appropriations for the publication of this important work.

International Sanitary Conference.—The diplomatic sanitarians adjourned March 2d *sine die*. What they did is yet to be made public by the State Department; it is said that they did some good work, and held a number of dignified and protracted meetings. It will be interesting to see the result. If sanitation gets so mixed in an American Congress, what will it be in a Congress of diplomats? Diplomacy is not always healthy, and sanitary measures certainly must at times violate diplomacy to be effective.

National Board of Health.—Congress, after considerable discussion, during the last days of its session, appropriated \$50,000 for the use of the National

Board of Health, but with the proviso that no other moneys heretofore appropriated and remaining unexpended should be made use of by the Board.

The Bad Odours of New York.—The committee of the N. Y. State Board of Health on effluvia and nuisances, has recently held meetings to inquire into the causes of the pestilential odours emanating from Hunter's Pt., Brooklyn.

At a meeting held Feb. 26, several bitter complaints were read from residents of Murray Hill and the adjoining fashionable quarters of New York. Dr. Chandler, President of the N. Y. Health Board, attributed the odours to the oil refineries, varnish, fertilizers, chemical, and ink factories, and to the sugar refineries. He believed such changes in the mode of manufacture could be introduced as would prevent the development of the bad odours.

At a subsequent meeting, held March 5, letters were read from a number of prominent physicians of the east side of the city complaining of the Hunter's Point nuisances. Residents of Brooklyn also testified to the offensive character of the odours. Dr. J. H. Raymond, Sanitary Superintendent of the Brooklyn Board of Health, said the Board would be glad to have the State Committee investigate nuisances, but that the Board would be capable as it was thoroughly desirous of effecting the necessary changes, if the laws defining its powers could be enforced.

Prosecution of Unregistered Practitioners in New York.—The New York County Medical Society has authorized its Censors to employ counsel for the purpose of prosecuting irregular and unregistered practitioners.

Graduates in Medicine in 1881.

Jefferson Medical College (Phila.)	205
University of Pennsylvania	110
Bellevue Hospital Medical College (N. Y.)	117
University of the City of New York	191
University of Nashville and Vanderbilt University	168
Nashville Medical College	53
Indiana Medical College (Indianapolis)	85
College of Physicians and Surgeons (Baltimore)	154
University of Louisville	100
Louisville Medical College	54
Hospital College of Medicine (Louisville)	24
University of Maryland	73
Michigan College of Medicine (Detroit)	28
University of Buffalo	48
Medical College of Ohio (Cincinnati)	103
Cincinnati College of Medicine and Surgery	30
Miami Medical College (Cincinnati)	34
Rush Medical College (Chicago)	172

Medical Society of the State of New York.—The seventy-fifth annual meeting of this society was held at Albany, February 1, 2, and 3, Dr. William H. Bailey, President, in the chair. A large number of excellent papers were read.

The following resolutions were adopted.

“Resolved, that the Medical Society of the State of New York advises the various county medical societies that form its constituency, to endeavour to secure the coöperation of the other incorporated county and district medical societies, throughout the State, in the enforcement of the ‘Act to regulate the licensing of physicians and surgeons,’ passed May 29, 1880.

"Resolved, that, in the opinion of this Society, it is desirable for the legislature to thoroughly amend and revise the laws of this State in regard to the office and duties of coroners, and that the Society would recommend, for their consideration, the recent statute act adopted by the State of Massachusetts.

"Resolved, that a special committee of five be appointed, by the President, to be designated a 'Committee on the Code of Ethics,' whose duty it shall be to consider the question of desirable changes in the code, and who shall present to the Society, at the annual meeting in 1882, such suggestions on this subject as they may decide upon."

The President appointed, as this special committee, Drs. Wm. C. Wey, of Elmira, C. R. Agnew, of New York, S. O. Vanderpoel, of Albany, Wm. S. Ely, of Rochester, and H. G. Piffard, of New York. A resolution offered by direction of the New York County Medical Society, to the effect that the State Society investigate the propriety of making a change in the law preventing the disclosure in court of any information obtained by physicians in their professional character from their patients, was referred to the Committee on Legislation with instructions to report in 1882.

The following officers were elected for the ensuing year: President, Abram Jacobi, M.D., of New York; Vice President, Dr. William Goran, of Stony Point; Secretary, Dr. Wm. Manlius Smith, of Manlius. Drs. T. F. Cock, of New York, and Jos. C. Hutchison, of Brooklyn, were appointed delegates to the International Medical Congress to be held in London, in August. The society adjourned to meet at Albany on the first Tuesday in February, 1882.

Primary Cancer of the Pancreas.—Dr. KENNIG reports, in the *Petersburg Med. Woch.* (February 5), a minute history of the case of this rare affection occurring in a woman aged fifty-three.

Gastric Remittent Fever.—In confirmation of the views respecting this disease advanced by Dr. F. Peyre Porcher in the January number of the *American Journal of the Medical Sciences*, we publish the following from Dr. D. I. CAM, of Asheville, N. C.:—

"The disease is essentially 'gastric.' The bowels, if at all, are only slightly involved. It is an *irritation*, not an inflammation. This is the true pathological state. My study of this disease, which has been deep and extensive, does not lead me to agreement with the view expressed, or at least suggested, by Dr. Charles West, that it is the child's typhoid fever. There is one sign of the disease which I consider as nearly *pathognomonic*, so nearly invariable is it. This is the child lying with the eyes obstinately closed, only opening them when aroused by being shaken or loudly spoken to.

"As regards the treatment, I yet pursue substantially the course which you mention; but I now use bismuth and oxalate of cerium every three or four hours, considering these as among the best means we have of allaying gastrointestinal irritation; and I use injections of warm water and assafetida p. r. n. to move the bowels—not insisting upon *purgation* as an important part of the treatment. The mortality must be infinitesimally small. If I have ever lost a case, I cannot remember it.

"The disease is as common *here* as it is on the seaboard or elsewhere."

University of Pennsylvania. Installation of the Provost.—On the 22d of February, at the Academy of Music, in the presence of a large and imposing assemblage Dr. William Pepper was duly installed, by the Governor of Pennsyl-

vania, as Provost of the University. In his installation address Dr. Pepper considered the past progress and plans for the future of the University. In the evening a reception was given to the Provost by the Penn Club.

Vienna Medical Faculty.—Professor Czerny has been elected to fill the chair left vacant by Prof. Dumreicher, and Prof. Kaposi to succeed Prof. Hebra.

College of Physicians and Surgeons, Baltimore.—The faculty of this institution have decided to lengthen their curriculum to six months, and to obtain the doctorate a student must have read medicine under a preceptor for one year and have attended two six months' courses.

Value of the Dentaphone.—Mr. EDMUND TRIBEL, Superintendent of the Royal Asylum for the Deaf and Dumb in Berlin, has made a series of extensive and critical experiments with the dentaphone as an aid to hearing, with entirely negative results. He states (*Archives of Otology*, Dec. 1880) that where deaf-mutes are concerned, the dentaphone, in its present condition at least, cannot be put to any practical use, not even as a means of advancing articulation, and he believes that the instrument cannot give any noteworthy assistance to any one whose hearing is in the least defective. These results agree entirely with those obtained by competent observers in this country.

Health of New York.—The number of cases of contagious diseases reported to the New York Health Board, for Feb. 1881, are as follows:—

Smallpox	62
Scarlet fever	657
Diphtheria	402
Measles	169
Typhoid fever	23

Smallpox has somewhat increased during the last month. Eight cases were removed to the Riverside Hospital, Blackwell's Island, on March 10th, and seven cases were reported on March 11th. The officials of the Vaccinating Department of the New York Health Bureau are vaccinating large numbers in the tenement houses. The department vaccinated 48,000 persons in 1880. The virus employed is bovine, and comes from calves kept on a farm at Clifton, New Jersey.

The mortality of the present season is unusually large. On March 11th 122 deaths were reported, while the number for the corresponding week of previous years was below 100. Although the various contagious diseases, as well as pneumonia, prevail more extensively than is usual, the increased mortality can hardly be accounted for in that way. The computations of the Bureau of Vital Statistics rest upon the last census, while the present population of the city is believed to have been largely augmented by transient visitors, from West and South. The total mortality for the five weeks ending March 5th was 3520, and that for the five previous weeks 3540.

At a meeting of the New York Academy of Medicine, held March 17, 1881, Dr. A. L. Loomis called the attention of the Academy to the largely increased death-rate of the city. He said: "All of us have noted the increased malignity of diseases, both acute and chronic, recently, and we have been alarmed by the increase of the mortality rate in our city. Old diseases seem to have taken new forms of violence, and fevers of a new type have spread through the city, whose symptoms and development put them beyond our power of classification. Those

who have had patients advanced in years who are suffering from illness of this new nature have been forced into the greatest anxiety, for what before was little feared now proves dangerous. What is the cause? Have the diseases themselves taken a new direction, or is there some new danger among us that deserves to be discovered and removed?

"It is our duty to answer these questions if we can, and to answer them promptly. From my personal inquiry into the subject I am led to lay down the following four propositions:—

"*First.* That the city must now be considered as in a malarial condition.

"*Second.* That our sewerage system is very defective.

"*Third.* That large quantities of animal and vegetable matter are undergoing decomposition in our streets.

"*Fourth.* That nearly all diseases are now more malignant and fatal than they have been in my experience in the last twenty years.

"I believe that the factors I have named are responsible for the low condition of the public health; nor does it seem strange to me at all that there is such a high percentage of mortality in this city. I predict that, if the causes referred to are not removed, an epidemic of great proportions will certainly result."

Dr. Loomis then offered the following resolutions, which were seconded by Dr. Austin Flint, and unanimously adopted:—

"*Whereas*, it is our opinion that the uncleanly condition of the streets of this city is an efficient factor in increasing the malignity of many diseases, and thus contributes to the present alarming death-rate:

"*Resolved*, that, acting under a deep sense of our responsibility as members of a profession whose chief duty it is to check the development of disease, we earnestly warn the public against the danger of allowing this state of things to continue."

Anti-rivisection Bill.—Mr. Bergh has again presented to the New York Legislature the same anti-vivisection bill which he endeavoured to have passed a year ago. The Committee on Public Health, to which it was referred, have reported adversely to it.

Convalescents' Home.—This home, situated at No. 433 E. 118th St., New York, was organized last year with the object of providing a temporary retreat for convalescents recently discharged from the hospitals but still unable to resume their usual occupation. 47 patients were treated in it during the past year.

Health of Charleston, S. C.—Dr. F. PÉRE PORCHER, of Charleston, informs us, under date of March 18th, that a form of influenza prevails at present in that city and State. It is characterized by fever, catarrhal symptoms, cough, some pains in the head and limbs—sometimes by vomiting and redness of the tongue. He has noticed in two cases marked swelling and suffusion of the face. There is no eruption, and there is an absence generally of the severe pains and prostration which accompanied the Dengue of last summer. Sometimes the attacks are pretty severe, the fever being high, with some head symptoms, dizziness, etc. It has prevailed in Columbia and elsewhere, and we have heard of a number of cases on the Ashley River, ten miles from the city.

Scarlet fever exists to some extent in Charleston, and an occasional case of diphtheria, but the latter has almost completely disappeared. Though the children in the public schools are all being vaccinated, there is no smallpox.

Library of the College of Physicians of Philadelphia.—Dr. Frank Woodbury has been elected Librarian, vice Dr. Robert Bridges, resigned. The making of the Card Catalogue has been placed in charge of an assistant to the Librarian, and is now progressing satisfactorily.

Retgression in Medical Education.—The Faculty of the Bellevue Hospital Medical College introduced, for the session of 1880-'81, important changes in the curriculum of instruction and in the requirements for graduation. The preliminary term was abolished, and the regular winter session was extended to six months. Attendance upon three winter sessions was made obligatory. Students were required during the two first years to attend all the lectures, didactic and clinical, and at the end of the first and second years to pass examinations in Chemistry, Anatomy, Physiology, Materia Medica, and Therapeutics. An examination in these branches having been passed, the third year was to be devoted to the practical departments of Medicine, Surgery, and Obstetrics. These changes were made by the Faculty with entire unanimity and with the expectation that a considerable pecuniary sacrifice would be demanded on the part of its members, who were actuated solely by a desire to secure a higher grade of professional acquirements for the graduates of the college.

In a circular just issued, the Faculty states that "The experience of the session of 1880-'81 has led them reluctantly to the conclusion, that to persist in the requirement of attendance during three courses will be to incur a risk, as regards the interests of the college, which they do not feel justified in assuming; and the purpose of this announcement is to state that, after the present session of 1880-'81, attendance during a third session will be optional and not obligatory. This college, like most American medical colleges, is self-sustaining; and the special provisions for instruction, which have been and will continue to be maintained, call for a large expenditure of money as well as of time and labour. With an undiminished desire to continue the requirement of the three sessions, and with not less willingness than heretofore to make whatever personal sacrifices may be necessary, the Faculty feel obliged, by a proper regard for the prosperity and usefulness of the college, to return to the requirements for graduation which were in force prior to the session of 1880-'81. In making the changes introduced during this session, it was foreseen that, a large proportion of the students in this college coming from distant parts of the United States, the necessary expenses of spending three winters in the city of New York would render difficult or impossible the attendance of many who would otherwise join the classes. Many students, of course, would be led to attend other colleges which require only two sessions for graduation. It was hoped, however, that the progressive movement of the Bellevue Hospital Medical College would secure approval and co-operation on the part of the medical profession sufficient to render the change feasible. In so far as a judgment can be formed from the present session, the profession is not prepared to sustain the movement.

"In announcing a return to their original requirements for graduation, the Faculty desire to state that all the new additions to the curriculum will be retained. It is not proposed to recede in the least from these. Students will have the same opportunities for practical exercise in the different departments as those enjoyed by the class of 1880-'81. For those who choose to attend during three sessions, the provisions as respects examinations in the elementary branches at the end of the second year, and an exclusive devotion to the practical departments during the third year, will be continued. To all students who are able to do so, now, as hitherto, attendance during three years is strongly recommended; and, from the number of those who have already matriculated with the expecta-

tion of attending three sessions, the Faculty entertained a belief that not an inconsiderable proportion of future classes will voluntarily follow their example."

Washington, D. C., Training School for Nurses.—This institution is now about completing its third session with a small but earnest class of nurses. It labours under many disadvantages in the want of funds and sufficient hospital accommodation for practical purposes, but has been recently encouraged by the interest which its active Board of Managers have succeeded in exciting among the residents of Washington, and which has resulted in an Art Loan Exhibition, the contributions to which are of a high order of merit—and which is conducted by a large number of those best able by their personal influence to insure success in the undertaking. The exhibition bids fair to prove a pecuniary gain, and a prize having been offered for the best essay on nursing, already 27 contestants have presented themselves.

A New Hospital for Washington.—A bill for the establishment of a general hospital that shall be independent of all private interests, or of sectarian influences, was accepted by the U. S. Senate Committee with a recommendation on their part to appropriate \$125,000 for its benefit, but unfortunately was not put into proper shape until the last hours of Congress, and so died in travail. Its projectors, however, are sanguine of final success, and will be ready with their bill to push the matter at the opening of the next Congress.

Providence Hospital, Washington, D. C.—This hospital, which, up to the present time, has been for many years the only one possessed by the District, which could be made available for the general treatment of the better class of patients, is, it seems, controlled entirely by Sisters of Charity, the medical board occupying a very insignificant position in the exercise of its own authority in the treatment of disease, and none in the management of the hospital; holding their appointments at the will of the Sister-in-charge. As a natural consequence, a want of harmonious action on both sides resulted during the past winter in the enforced resignation of some, and voluntary resignation of others of the hospital staff, which fairly represented the best elements and interests of the local medical men, leaving but two men on the Board. A new staff was immediately organized which took their places—and, as a sop to Cerberus—one of the causes of complaint was removed, how effectually remains to be seen, by the appointment of a resident house physician; up to this time the rules of the Sisterhood would not permit one of the male sex to pass the night under their roof, unless he in some way required their care and attention. Sober young professional men with all their senses under control and prepared for emergencies, gave way to drunkards and debauchees.

International Medical Congress, London, 1881.—Arrangements for the approaching International Medical Congress are being energetically prosecuted by the Executive Committee. The Inaugural address will be delivered by Sir James Paget on the morning of August 3d. The following mornings will be devoted to the business of the various Sections; while the afternoons (with the exception of Saturday afternoon, which will be left free for garden parties, excursions, etc.) will be devoted to the general sessions of the Congress, at which four addresses will be given by four distinguished men of different nationalities, viz.: Prof. Huxley, on the "Connection of General Science and Medicine;" Prof. Volkmann, of Halle, on "Modern Surgery;" and Dr. John S. Billings, of Washing-

ton, on "Medical Literature;" the fourth address, to be given by a distinguished Frenchman, has not yet been definitely arranged.

The Executive Committee has announced the rules for the organization of the Congress, which "will be composed of medical men legally qualified to practise in their respective countries, who shall have inscribed their names on the Register of the Congress, and shall have taken out their tickets of admission. The subscription is fixed at one guinea, which amount is to be paid on inscription and before the commencement of attendance at the meetings. Each Member of the Congress will be entitled to a copy of the Transactions when published."

"Notices of papers, together with abstracts of the papers, to be read in any one of the sections must be sent to the Secretaries of that section before April 30, 1881. These abstracts will be regarded as strictly confidential communications, and will not be published until the meeting of the Congress. Any Member wishing to bring forward a subject not already on the programme must give notice of his intention to the Secretary-General at least twenty-one days before the opening of the Congress. The Officers of each Section will decide on the advisability of accepting any communication addressed to their Section, and also the time when it shall be made. No communication will be received which has been already published."

"No speaker is allowed more than ten minutes, with the exception of readers of papers and those who introduce debates, who may occupy fifteen."

The Reception Committee has decided upon giving an evening reception at South Kensington, and perhaps a second in the Albert Hall. The Lord Mayor of London purposes entertaining the members of the Congress at dinner at the Mansion House on August 4th.

Regulating the Sale of Proprietary Medicines.—We are informed that a bill has been drafted, which has received the official sanction of the New York Academy of Medicine and of the New York County Medical Society, and will be presented to the New York Legislature, requiring that the manufacture of proprietary medicines shall affix the formula of each nostrum to the bottle containing it, and designating a penalty to be inflicted for neglect of so doing.

A New Hospital for Brooklyn.—Mr. Geo. I. Seney has given \$200,000 and land worth \$70,000, at Seventh St. and Seventh Ave., Brooklyn, for the erection of a hospital constructed upon the cottage plan. A board of thirty-two trustees has been appointed who will superintend the erection of the new hospital.

Meetings of State Medical Societies will be held during the month of April as follows:—

Medical Society of Tennessee at Nashville, on Tuesday April 5th.

Mississippi State Medical Association at Winona, on Wednesday April 6th.

Medical Association of State of Alabama at Montgomery, on Tuesday April 12th.

South Carolina Medical Association at Newberry, on Tuesday April 19.

California State Medical Society at San Francisco, on Wednesday April 20th.

Medical Association of Georgia at Thomasville, on Wednesday April 20th.

A Medical Knight.—Queen Victoria has announced her intention of conferring the honour of knighthood upon JAMES RISDON BENNETT, M.D., President of the Royal College of Physicians of London.

Literary Notes.

Henry C. Lea's Son & Co. have in preparation a "Treatise on Midwifery," by Dr. Theophilus Parvin, of Indianapolis. It will be a copiously illustrated octavo volume of about 500 pages, and will be the first systematic work on obstetrics which has emanated from an American author since the publication of the late Professor Hodge's great work in 1864. Also a "Practical Treatise on Impotence, Sterility, and allied Disorders of the Male Sexual Organs," by Dr. Samuel W. Gross. Sterility is generally ascribed to the female, and she is apt to undergo treatment therefor without consideration as to the possible existence of the defect in the male, but Dr. Gross gleans from prominent specialists in female disorders that about one-third of the cases of sterility are due to the male, and that an examination of the causes of this condition should include the male as well as the female before operations are performed upon the latter.

The same house promises early in April a volume of "Lectures on Diseases of the Nervous System, especially in Women," by Dr. S. Weir Mitchell. The subject includes the wide scope of nervous disorders of the hysterical and their treatment. The book will be illustrated with five lithographic plates, showing the intimate connection of temperature, season, and climate, with attacks of chorea. Also a "Practical Treatise on Electricity and its Applications to Medicine," by Prof. Bartholow. The scope of the work embraces electro-physics and electro-physiology as well as electro-diagnosis and electro-therapeutics.

J. B. Lippincott & Co. have just issued the second volume of Prof. Hayes Agnew's "Surgery." It is, like the first, a profusely illustrated volume of 1066 pages. The third volume, which will complete the work, is in process of rapid preparation.

William Wood & Co. have issued in their "Library Series" a volume on the "Materia Medica and Therapeutics of the Skin," by Dr. H. G. Piffard of New York; and announce a volume on the Continued Fevers, by Dr. J. C. Wilson of Philadelphia.

D. Appleton & Co. have just published the long promised new edition of Prof. Van Buren's "Lectures upon Diseases of the Rectum;" the book has been greatly enlarged and indeed largely rewritten; and announce as in preparation "The Applied Anatomy of the Nervous System," by Dr. Ambrose L. Ranney, Adjunct Prof. of Anatomy in Univ. of City of New York. The work is intended to present the latest knowledge in the anatomy and physiology of the nervous system, and to show its application in medicine and surgery.

Dr. W. F. Mittendorf, Surgeon to the New York Eye and Ear Infirmary, has issued through G. P. Putnam's Sons "A Manual on Diseases of the Eye and Ear." It forms an octavo volume of nearly 450 pages, and is illustrated with some very handsome chromo-lithographs.

A German translation of the last edition of Dr. Hamilton's "Treatise on Fractures and Dislocations" is announced by Vandenhoeck and Ruprecht, of Göttingen.

Index Medicus.—Mr. F. Leypoldt, of New York, the energetic publisher of the *Index Medicus*, undaunted by the pecuniary loss entailed by its two years of publication, but with firm faith in the ultimate support of the student members of the profession, announces his intention of continuing the publication for another year, in the hope that by the expiration of that time it may be placed upon a self-supporting basis, for which it requires only two hundred additional subscribers. The *Index Medicus* is a monthly classified record of the current medical literature (including contents of medical journals and transactions) of

the world, and is compiled under the supervision of Dr. John S. Billings, of the National Medical Library at Washington. It forms, in connection with the magnificent Index Catalogue of the National Medical Library, a complete index of medical literature to date, and is of inestimable value to every intelligent student, teacher, writer, and practitioner in the profession. We trust that the members of the profession will recognize the importance of insuring the continuance of the *Index* by at once forwarding subscriptions (\$6 per annum) to Mr. Leopoldt, since upon the encouragement which he now derives depends his ability to continue its publication after this year. The worth of the work has been so fully recognized by all who use it that its suspension could only be looked upon as a great calamity.

OBITUARY RECORD.—Died, at Washington, on the 23d of February, aged 50 years, GEORGE ALEXANDER OTIS, M.D., Surgeon U. S. A. Dr. Otis, who is widely known as an eminent writer on military surgery, and as the compiler of the surgical volumes of the Medical and Surgical History of the War, was born at Boston, Mass., Nov. 12, 1830; he graduated in the Arts at Princeton College and in Medicine at the University of Pennsylvania, in 1850. He then visited Europe and prosecuted his studies in London and Paris, and returning to this country he entered upon the practice of his profession at Springfield, Mass. He entered the army as surgeon of the 27th Massachusetts Volunteers in September 1861, and after the close of the war he entered the medical corps of the regular army.

Surgeon General Barnes announces his death in the following official circular:—

"It is with profound regret and a sense of loss, not only to his corps, but to the medical profession, that the death of George Alexander Otis, Surgeon and Brevet-Lieutenant-Colonel U. S. Army, is announced to the Medical Corps of the Army.

"Surgeon Otis, with his personal observations of the surgical collections abroad, brought indefatigable industry and untiring energy to the development of the surgical and anatomical collections of the Army Medical Museum, which he has made the most valuable of their kind in the world. The compilation of the Surgical Volumes of the Medical and Surgical History of the War has placed Surgeon Otis confessedly among the most prominent contributors to surgical history.

"While on duty in this office Surgeon Otis wrote for publication no less than ten reports on subjects connected with military surgery, etc.; among which are his most valuable and exhaustive reports on 'Excision of the Head of the Femur for Gunshot Injury,' and on 'Amputation at the Hip-joint in Military Surgery.' Of great culture, retentive memory, and with a remarkable facility of expression, he was, as a compiler and writer, conscientious in his analyses, giving his deductions from the facts before him with modesty, but decision. With such a record it is needless to speak of his zeal, his ambition, or his devotion to his profession and especially to the reputation of the corps of which he was so bright an ornament. While devoting himself to the preparation of the third and last surgical volume (now more than half completed) of the Medical and Surgical History of the War, he died in Washington February 23, 1881. His untimely death will be deeply deplored, not only by the Medical Corps of the Army, but by the whole medical profession at home and abroad."

To Readers and Correspondents.—The Editor will be happy to receive early intelligence of local events of general medical interest, or which it is desirable to bring to the notice of the profession. Local papers containing reports or news items should be marked.

CONTENTS OF NUMBER 461.

MAY, 1881.

CLINICS.

CLINICAL LECTURES.

	PAGE
On Amyloid Kidney. A Clinical Lecture delivered at the Good Samaritan Hospital, Cincinnati. By JAMES T. WHITTAKER, A.M., M.D., Professor of Theory and Practice of Medicine in the Medical College of Ohio	259
Remarks on the Diagnosis and Treatment of Pruritus Vulvæ. A Clinical Lecture delivered at St. Mary's Hospital. By ALFRED WILTSHIRE, M.D., F.R.C.P., Joint-Lecturer on Obstetric Medicine at the Hospital	265

HOSPITAL NOTES.

Bellevue Hospital, New York. (Service of Dr. Austin Flint, Sr.) Quebracho in Dyspnoea	271
Atony of the Bladder; Recovery. By Mr. Pearce Gould	273

MONTHLY ABSTRACT.

ANATOMY AND PHYSIOLOGY.

PAGE	PAGE
Calcification of the Spinal Dura Mater. By Professors Heschl and Ludwig	275
Rare Form of Intraventricular Communication. By Dr. Chiari	276
The Cremaster considered as an Æsthesiometer. By Dr. Jose Arman-gue	276

MATERIA MEDICA AND THERAPEUTICS.

Physiological Properties of Thalic-trin. By M. Doassans	277
The Spray Question	278
On Five Cases of Transfusion of Blood into the Peritoneal Cavity. By Von Kaczorowski	279

MEDICINE.

On the Treatment of Fever in Chil-dren. By M. Steffen	280
Dengue in Egypt. By Dr. Mackie	281
Catarrhal Diphtheria. By Marx	282
On an Organism in Diphtheritic Membranes. By M. Talamon	282
On a Peculiar Form of Rheumatic Fever in Childhood. By Dr. Hirschsprung	283
Treatment of Bronchitis and Pleur-isy by Pilocarpin. By M. Tau-leigne	284
The Treatment of Pneumonic Fever (Acute Lobar Pneumonia) by the Employment of the Wet-Sheet. By Dr. Austin Flint	284
The Import of the Sweating of Con-sumptives. By Dr. Rousselot	286
Temporary Aortic Insufficiency and Triple Aortic Second Sound. By Prof. Drasche	287
Extract of Calabar Bean in Atony of the Intestines. By Schaefer	288
Intestinal Obstruction by Large Bi-liary Calculus. By M. Dumnénil	289
The Pathology of Diabetic Coma. By Von Jaksch	289
Cases of Diabetes treated with Sal-icylic Acid. By Dr. Latham	289
On Morbid Sweating. By M. Bou-veret	290
Cure of Lichen Ruber by Hypoder-mic Injections of Arsenic. By Herr Koebner	291

SURGERY.

PAGE	PAGE
Gastrostomy in Cases of Stricture of the Esophagus. By Dr. T. F. Prewitt 292	Chlorate of Potash in Acute Benignorrhagia. By Dr. Gamir . . . 295
Serious mishap after Gastrostomy. By Dr. P. Kraske 292	Trephining of the Ilium. By Drs. G. Fischer and M. Riedel . . . 295
On Colotomy. By Dr. C. Studsgaard 294	Pulsating Encephaloid mistaken for Aneurism; Ligature of Right Common Carotid Artery. By Surgeon M. D. Moriarty 296
Healing up, under Antiseptic Precautions, of Fresh and Dead Tissues in Serous Cavities, and the Subsequent Fate of these Tissues. By Rosenberger 294	On the Ox Aorta Ligature, and on the Variability of Catgut. By Messrs. Richard Barwell, Lister, Treves, and Heath 298
Amputation of the Breast by a Bloodless Method. By Szuman . . . 295	

MIDWIFERY AND GYNECOLOGY.

The Treatment of Extra-Uterine Gestation. By Drs. William T. Lusk, Jacobi, Rockwell, Billington, and Mundé 301	Vesico-Vaginal Fistula treated by the formation of a Recto-Vaginal Fistula and Closure of the Vagina. By Dr. Geza Antal 305
On the Determination of the Indications for Gastrotomy in Cases of Extra-Uterine Pœtation. By Dr. C. Litzmann 304	Extirpation of Uterus and Ovaries. By Drs. Thomas Chambers, Heywood Smith, and Routh 306
	The Therapeutics of Ovarian Compression. By M. Bourneville . . 307

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

Poisoning by Atropia successfully treated by Hypodermic Injection of Pilocarpin. By Prof. Puřjesz . 307	Localization of Strychnia. By Lajoux and Grandral 307
	Poisoning by Glycine. By Dr. Léonffre 308

MEDICAL NEWS.

Impure Ice as a Cause of Intestinal Disease 309	Influence of the Antiseptic Method on Medical Jurisprudence . . . 317
Resection of the Stomach 311	Sea-side Nursery 317
Health of New York 311	Private Gynecological Hospital . 317
Medical Experts 312	Physicians' Mutual Aid Association of New York 318
Revision of the German Pharmacopœia 312	Kentucky State Medical Society . 318
The Medical Law of New York . . . 313	University of Pennsylvania . . . 318
Cremation in the United States . . 313	University of Maryland 318
Fractures of both Clavicles Simultaneously 314	Munificent Gifts 318
The Columbian Institute 314	West Virginia State Board of Health 318
Training Schools for Nurses 314	Night Medical Service 318
Inspection of Plumbing 314	Epidemic among Horses 318
International Medical Congress, London, 1881 314	Prize awarded to Mr. Lister . . . 318
Prescribing over the Counter 315	Meetings of National and State Medical Societies 319
A Triumph of Dentistry 316	Guy's Hospital 319
Endowment of Presbyterian Hospital, New York 316	Library of the New York Academy of Medicine 319
A Swindler preying upon the Doctors 316	A Good Example for Hospital Managers 319
Graduates in Medicine in 1881 . . . 316	Banquet to an American Consul . . 319
The New York Smells 317	Another Literary Piracy 319
Sanitary Convention 317	Obituary Record.
Scarlet Fever in Charleston, S. C. . 317	Isaac Ray, M.D., LL.D.
A Congress of Laryngology 317	Richard Oswald Cowling, M.D. . . 320
	To Readers and Correspondents . 320